GOVERNOR
BRIAN SCHWEITZER

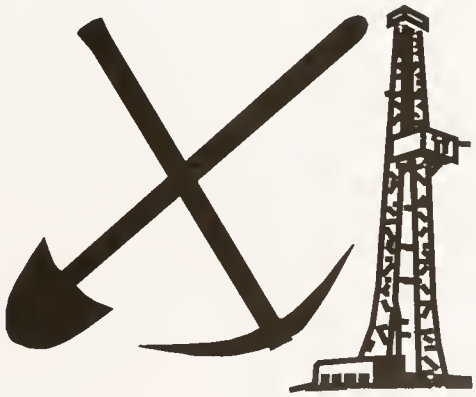
STATE OF MONTANA

# Governor's Executive Budget
# Fiscal Years 2008 – 2009

# Reclamation and Development Grants Program

Department of Natural Resources and Conservation

Conservation and Resource Development Division





Volume 5

# RECLAMATION AND DEVELOPMENT GRANTS PROGRAM

Project Evaluations and Funding Recommendations
For the 2009 Biennium
and
2007 Biennium Status Report

Prepared by the

Montana
Department of Natural Resources
and Conservation

Conservation and Resource Development Division
Resource Development Bureau

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January 2007

## LIST OF ABBREVIATIONS

| | |
|---|---|
| ACOE | Army Corps of Engineers |
| AMD | acid mine drainage |
| ARCO | Atlantic Richfield Company |
| BHCD | Big Horn Conservation District |
| BLM | Bureau of Land Management, U.S. Department of the Interior |
| BOGC | Montana Board of Oil and Gas Conservation |
| BNSF | Burlington Northern & Santa Fe Railroad |
| BSB | Butte-Silver Bow |
| CBM | coalbed methane |
| CD | conservation district |
| CECRA | Comprehensive Environmental Cleanup and Responsibility Act of 1989 |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| cfs | cubic feet per second |
| CSU | carbon sequestration unit |
| DEQ | Montana Department of Environmental Quality |
| DFWP | Montana Department of Fish, Wildlife & Parks |
| DLMR | Deer Lodge Milwaukee Roundhouse |
| DNRC | Montana Department of Natural Resources and Conservation |
| DOE | U.S. Department of Energy |
| EEE/CA | Expanded Engineering Evaluation/Cost Analysis |
| EIS | environmental impact statement |
| EPA | U.S. Environmental Protection Agency |
| gpm | gallons per minute |
| GLWQD | Gallatin Local Water Quality District |
| GWIC | Ground-Water Information Center, Montana Bureau of Mines and Geology |
| HNF | Helena National Forest |
| HRS | Hazard Ranking System |
| KNF | Kootenai National Forest |
| MBMG | Montana Bureau of Mines and Geology |
| MCA | Montana Code Annotated |
| MCCD | Meagher County Conservation District |

| | |
|---|---|
| MCL | maximum contaminant level |
| MSU | Montana State University |
| MWCB | Mine Waste Cleanup Bureau, MT Department of Environmental Quality |
| NCOC | National Carbon Offset Coalition |
| NEPA | National Environmental Policy Act |
| NRCS | Natural Resources Conservation Service |
| O&M | operation and maintenance |
| PGC | Pegasus Gold Corporation |
| PPCPs | Pharmaceuticals, personal care products, and endocrine-disrupting chemicals |
| PRB | Powder River Basin |
| RC&D | Resource Conservation & Development |
| RCRA | Resource Conservation and Recovery Act |
| RDGP | Reclamation and Development Grants Program |
| RFP | request for proposal |
| RI/RA/FS | Resource inventory/risk assessment/feasibility study |
| RIT | Resource Indemnity Trust |
| RRGL | Renewable Resource Grants and Loans |
| SMRWG | St. Mary Rehabilitation Working Group |
| ROD | record of decision |
| TLMD | Trust Land Management Division |
| TSEP | Treasure State Endowment Program |
| USBR | U.S. Bureau of Reclamation |
| USCOE | U.S. Army Corps of Engineers |
| USFS | U.S. Forest Service |
| USGS | U.S. Geological Survey |
| VCP | Voluntary Cleanup Plan |
| VCRA | Voluntary Cleanup and Redevelopment Act |
| WCT | westslope cutthroat trout |
| WPPS | Well Plugging Prioritization System |
| WRD | Water Resources Division |
| YRCDC | Yellowstone River Conservation District Council |

## TABLE OF CONTENTS



## LIST OF TABLES

## PROJECTS SUBMITTED FOR FUNDING IN THE 2009 BIENNIUM

Following is a list of projects submitted for funding in the 2009 biennium. For easy reference, the list is alphabetized by the names of the project sponsors. However, in Chapter II the project abstracts, assessments, and recommendations are presented in the order of their ranking by the Department of Natural Resources and Conservation and the Governor.

**APPLICANT NAME – Project Title** **Page**

# CHAPTER I

## Program Description and Procedures

### Program Information

The Reclamation and Development Grants Program (RDGP) is a state-funded grant program designed to fund projects that "indemnify the people of the state for the effects of mineral development on public resources and that meet other crucial state needs serving the public interest and the total environment of the citizens of Montana" (90-2-1102, MCA). The program, established by the 1987 Montana Legislature, is administered by the Montana Department of Natural Resources and Conservation (DNRC).

In February 2006, DNRC mailed application materials to all Montana communities, counties, the university system, conservation districts, state agencies, state legislators, and others who might benefit by program participation. The application deadline was May 15, 2006. DNRC received 18 applications for RDGP funding totaling over $4.8 million. These projects are listed alphabetically by applicant on pages vii and viii.

The funding source for this program is the interest income from the resource indemnity trust (RIT) fund. This fund, established by 15-38-201, MCA, receives proceeds from taxes levied on mineral production. Since 1986, 192 projects totaling more than $36 million have been authorized for funding by previous Legislatures. The 1993 Legislature authorized, beginning in state fiscal year (FY) 1996, a minimum allocation of $3 million for grants. In 1993, the Legislature also directed DNRC to give priority to grant requests from the Montana Board of Oil and Gas Conservation (BOGC). This priority is not to exceed $600,000 for the biennium and does not preclude BOGC from submitting additional grant requests. Additional BOGC grant requests are received and ranked by DNRC in the same manner as all other grant requests. DNRC is also statutorily required to give priority to abandoned mine reclamation projects in the amount of $800,000 (90-2-1113 [3], MCA). These projects may not include personnel costs or operating expenses.

The RDGP Act requires that the Governor submit, by the first day of each regular session of the Legislature, a list of all grant proposals received with his or her recommended priorities for funding (see Table 1). Administrative rules further provide that DNRC must furnish to the Legislature a status report on previously funded projects, provided here in Chapter III. This report is the result of those directives.

### Project Eligibility

The following excerpt from the RDGP Act (90-2-1112, MCA) establishes criteria that projects must meet in order to be eligible for funding.

1. Except as provided under subsection (2), to be eligible for funding under the Reclamation and Development Grants Program, the proposed project must provide benefits in one or more of the following categories:
   a. Reclamation of land, water, or other resources adversely affected by mineral development;
   b. Mitigation of damage to public resources caused by mineral development;
   c. Research, demonstration, or technical assistance to promote the wise use of Montana minerals, including efforts to make processing more environmentally compatible;
   d. Investigation and remediation of sites where hazardous wastes or regulated substances threaten public health or the environment; and
   e. Research to assess existing or potential environmental damage resulting from mineral development.
2. If a crucial state need exists to protect Montana's environment, the DNRC may evaluate and the Governor may recommend that the Legislature approve funding for projects in addition to those described in subsection (1).

## Applicant Eligibility

Any department, agency, board, commission, or other division of state government or any city, county, or other political subdivision or Tribal government within the state may apply for a grant from the Reclamation and Development Grants Program.

## Funding Limits

No grant may exceed $300,000, and there is no minimum funding limit. An applicant proposing more than one project may submit a separate application for each.

## Application Review and Ranking Procedures

The grant applications were evaluated for the technical and financial feasibility of the proposed projects, provision of public benefits, need and urgency, and impacts on the environment. Reviewers included staff members of the Conservation and Resource Development Division of DNRC and federal, state, and university personnel with expertise in specific project areas. For each application, project reviewers wrote a descriptive project assessment incorporating their concerns, ideas, and comments.

More funds are requested than are available. Therefore, the department ranks feasible projects, so that it can recommend funding priority and funding level to the Governor and the Legislature. Evaluation criteria established by the 1987 Legislature include, but are not limited to:

1. The degree to which the project will provide benefits in its eligibility category or categories.
2. The degree to which the project will provide public benefits.
3. The degrees to which the project will promote, enhance, or advance the policies and purposes of the Reclamation and Development Grants Program.
4. The degree to which the project will provide for the conservation of natural resources.
5. The degree of need and urgency for the project.
6. The extent to which the project sponsor or local entity is contributing to the costs of the project or is generating additional nonstate funds.
7. The degree to which jobs are created for persons who need job training, receive public assistance, or are chronically unemployed.
8. Any other criteria DNRC considers necessary to carry out the policies and purposes of the Reclamation and Development Grants Program.

Under the ranking system, a proposal could receive 215 points. Specific criteria were established for each category to provide consistency. Of the following criteria, public benefits and need and urgency were weighted most heavily.

| | Maximum Points Possible |
|---|---|
| 1. Public benefits | 90 |
| 2 Need and urgency | 50 |
| 3. Appropriateness of technical design | 40 |
| 4. Financial feasibility | 15 |
| 5. Project management organization | 20 |
| **Total possible points:** | **215** |

## Recommendations

After ranking the projects and recommending funding, the Conservation and Resource Development Division made its recommendations to the DNRC director. The director then presented the recommendations by DNRC to the Governor. Final ranking of the proposed projects is presented in Table 1, along with funding recommendations.

An appropriations bill listing the Governor's recommendations will be introduced to the 2007 Legislature. By appropriation or other means, the Legislature may approve grants for those projects it finds consistent with the policies and purposes of RDGP.

## TABLE 1
### RANKING AND FUNDING RECOMMENDATIONS

| RANK | APPLICANT | AMOUNT REQUESTED | AMOUNT RECOMMENDED | CUMULATIVE AMOUNT |
|---|---|---|---|---|
| 1 | **MT Board of Oil and Gas Conservation**<br>2007 Northern District Orphaned Well Plug and Abandonment, and Site Restoration | $300,000 | $300,000 | $300,000 |
| 2 | **MT Board of Oil and Gas Conservation**<br>2007 Southern District Orphaned Well Plug and Abandonment, and Site Restoration | $300,000 | $300,000 | $600,000 |
| 3 | **MT Department of Environmental Quality**<br>Snowshoe Mine Reclamation Project | $300,000 | $300,000 | $900,000 |
| 4 | **MT Department of Environmental Quality**<br>Bald Butte Mine and Millsite Reclamation Project | $300,000 | $300,000 | $1,200,000 |
| 5 | **MT Department of Natural Resources and Conservation**<br>St. Mary Facilities Rehabilitation | $300,000 | $300,000 | $1,500,000 |
| 6 | **Powell County**<br>Milwaukee Roundhouse Voluntary Cleanup | $285,380 | $286,000 | $1,786,000 |
| 7 | **MT Department of Natural Resources and Conservation**<br>Reliance Refinery | $300,000 | $300,000 | $2,086,000 |
| 8 | **Central Montana Water Authority**<br>Utica Well 2 | $300,000 | $300,000 | $2,386,000 |
| 9 | **MT Board of Oil and Gas Conservation ,**<br>Southern District Tank Battery Cleanup | $300,000 | $300,000 | $2,686,000 |
| 10 | **Meagher County CD**<br>Hydrologic Investigation of the Smith River Watershed | $218,700 | $300,000 | $2,986,000 |
| 11 | **MT Department of Environmental Quality**<br>Belt Acid Mine Drainage Mitigation | $300,000 | $282,000 | $3,268,000 |
| 12 | **MT Department of Environmental Quality**<br>Swift Gulch Placer Tailings and Wetland Establishment | $300,000 | $150,000 | $3,418,000 |
| 13 | **Broadwater CD**<br>Whites Gulch Reclamation – Fish Barrier | $24,500 | $24,500 | $3,442,500 |
| 14 | **MT Department of Environmental Quality**<br>Landusky Mine – Characterization of Surface Water/ Groundwater Interactions in Swift Gulch and the Adjacent Landusky Pit Complex | $300,000 | $300,000 | $3,742,500 |
| 15 | **Big Horn CD**<br>Montana Regional Coalbed Methane | $157,659 | $160,000 | $3,902,500 |
| 16 | **Gallatin Local Water Quality District**<br>Assessment and Distribution of Pharmaceuticals | $293,765 | $294,000 | $4,196,500 |
| | **TOTAL** | **$4,280,004** | **$4,196,500** | **$4,196,500** |
| **Projects Below This Line Were not Recommended for Funding** | | | | |
| NF | **Geraldine, Town of**<br>Moonlight Meadow Test Hole Abandonment | $265,000 | $0 | $4,196,500 |
| NF | **Montana Tech of The University of Montana**<br>Butte Native Plant Propagation Nursery | $289,922 | $0 | $4,196,500 |
| | **TOTAL** | **$4,834,926** | **$4,196,500** | **$4,196,500** |

## CHAPTER II

### Project Abstracts, Evaluations, and Recommendations for the 2009 Biennium

These evaluations are based on DNRC review of the projects. The 16 evaluations of recommended projects are presented in the order of their ranking. Of the $4,196,500 recommended for these projects, a statutory maximum of $3 million may be awarded by the 2007 Legislature. To find any particular evaluation quickly, consult the alphabetical listing of projects by the name of the applicant on page v.

For projects recommended for RDGP funding, "TOTAL PROJECT COST" is the sum of "OTHER FUNDING SOURCES" plus the "AMOUNT RECOMMENDED".

## Part I. Projects Recommended for Funding

**Project Nos. 1 & 2**

| | | |
|---|---|---|
| **Applicant Name** | Montana Board of Oil and Gas Conservation (BOGC) | |
| **Project Names** | 2007 Southern District Orphaned Well Plug and Abandonment, and Site Restoration<br>and<br>2007 Northern District Orphaned Well Plug and Abandonment, and Site Restoration | |
| **Amount Requested** | $ 600,000 | |
| **Other Funding Source** | $ 45,800 | Applicant |
| **Total Project Cost** | $ 645,800 | |
| Amount Recommended | $ 600,000 | |

**Project Abstract** (Prepared and submitted by applicant)

The purpose of this grant request is to provide funding to properly plug and abandon orphaned oil/gas (bond forfeiture) and leaking orphaned abandoned wells and perform surface reclamation. The wells are not economical and have the potential of causing damage to subsurface formations, the state's water, and the surface around each well.

The BOGC will eliminate the threat of contamination by soliciting bids to plug and abandon the wells. Under supervision of the board's staff, the successful bidder will properly plug and abandon each well, dispose of and/or remediate contaminants, and reclaim the surface location.

The wells produced oil/gas or were plugged in the past. The operators could no longer afford to produce the wells, so the wells were shut in. The companies' assets will not cover the liabilities to creditors, leaving the operators insolvent. Since the companies are insolvent or long since defunct, responsibility for the wells and potential environmental damage rests with the BOGC and the state. The wells will be properly plugged and abandoned when funding is made available.

The orphaned wells are located throughout Montana. By prioritizing the board's list of orphaned wells, in most cases the wells that present the highest potential for damage to the environment because of leaking or loss of mechanical integrity will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following availability of funding.

**Technical Assessment**

The priority and funding amount for BOGC applications, 2007 Southern District and 2007 Northern District, are established pursuant to 90-2-1113(2) (a-c), Montana Code Annotated (MCA). For reference, this statute states:

*(2)(a) Subject to the conditions of this part, the department shall give priority to grant requests, not to exceed a total of $600,000 for the biennium, from the BOGC. The BOGC shall use a grant that received priority under this subsection (2) (a) for oil and gas reclamation projects. The board may use a maximum of 2.5% of the amount of a grant for administrative costs associated with implementing the projects covered in the grant.*

*(b) Any unobligated fund balance of a grant that received priority under subsection (2) (a) remaining at the end of the current biennium must be included as part of the $600,000 limitation for the next biennium.*

*(c) The priority given to the BOGC under subsection (2) (a) does not preclude the BOGC from submitting additional grant requests. The department shall evaluate additional grant requests from the BOGC in accordance with the provisions of subsection (1).*

These two applications represent 24 wells, in Glacier (15 wells), Big Horn (four wells), Musselshell (two wells), and Yellowstone (three wells) counties. All of the wells have been evaluated using Montana's Well Plugging Prioritization System (WPPS). WPPS rates such factors as the threat the well poses to groundwater and surface water, mechanical condition of the wellhead casing, public safety, and potential for cross-contamination of mineral-bearing formations and aquifers. All of these wells are leaking some combination of oil, gas, and/or water to the ground surface or they exhibit loss of mechanical integrity in the wellhead or casing. Delays in proper plugging and abandonment of these wells will result in continued threats to the environment and increased future costs.

The wells are abandoned, and all attempts by BOGC to hold a party responsible for plugging these wells have been unsuccessful. The plugging of these wells involves standard oil-field equipment and procedures and will be performed by qualified oil-field plugging contractors.

**Financial Assessment**

The two RDGP grant applications are for $300,000 each. Totals for major budget categories and matching contributions are as follows:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 0 | $ 28,736 | $ 28,736 |
| Employee Benefits | $ 0 | $ 3,876 | $ 3,876 |
| Contracted Services | $ 600,000 | $ 0 | $ 600,000 |
| Supplies and Materials | $ 0 | $ 1,000 | $ 1,000 |
| Communications | $ 0 | $ 504 | $ 504 |
| Travel | $ 0 | $ 11,684 | $ 11,684 |
| **Total** | **$ 600,000** | **$ 45,800** | $ 645,800 |

Cost estimates are based on bids on past projects contracted by BOGC and are reasonable for the work performed. As with any oil- and- gas-plugging project, unknown or unforeseen circumstances may be encountered underground, and costs may vary considerably.

The 2007 Southern and 2007 Northern applications constitute the BOGC $600,000 priority allocation for the 2009 biennium.

**Environmental Evaluation**

No long-term adverse environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust, emissions from combustion engines) would be minimal, provided that equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition. If the sites involve cleanup and disposal of drilling fluids, oil sludge, brine wastes, or other contaminants, these materials must be identified and characterized, and this information must be used to develop site-specific reclamation plans. Depending on the material and contaminants encountered, remedial action may involve burning, burial, landfarming, and addition of soil amendments for materials disposed of onsite, or it may involve hauling materials to a licensed off-site landfill or waste disposal facility. If disposal poses unusual difficulty or necessitates remedial actions not normally implemented by the board, appropriate regulatory or reclamation experts would need to be contacted.

**Public Benefits Assessment**

The proper plugging and abandonment of these wells benefits all Montanans by eliminating severe impacts to groundwater and surface water caused by oil-field development activity. Statewide, many abandoned and unplugged

wells threaten water supplies used for drinking water, stock watering, and irrigation purposes. Safety hazards (e.g., open holes, gas emissions, blowout potential) affect not only humans, but also stock and wildlife. Proper plugging eliminates site-specific problems and helps ensure long-term protection of soil, water, and vegetative resources. Moderate economic benefit will be realized by contractors, equipment suppliers, and other area retailers.

**Recommendation**

As per the priority contained in 90-2-1113 (2), MCA, a grant of up to $600,000 is recommended for the 2007 Southern District and 2007 Northern District projects, contingent upon DNRC approval of the project scope of work and budget.

**Project No. 3**

| | | |
|---|---|---|
| **Applicant Name** | Montana Department of Environmental Quality (DEQ) | |
| **Project Name** | Snowshoe Mine Reclamation Project | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Sources** | $ 1,265,704 | Applicant |
| | $ 276,300 | U.S. Forest Service |
| **Total Project Cost** | $ 1,842,004 | |
| **Amount Recommended** | $ 300,000 | |

**Project Abstract** (Prepared and submitted by applicant)

The Snowshoe Mine site, an abandoned hardrock mine site, is ninth on the DEQ's Abandoned Hardrock Mine priority sites list. The Snowshoe mine includes mill tailings and waste rock located within the floodplain of Snowshoe Creek. The uncontained waste material impacts water and sediment quality in Snowshoe Creek. The contamination is from heavy metals not limited to, but including, arsenic, cadmium, copper, lead, and zinc. Mining at Snowshoe produced lead, silver, and gold and has been inactive since the 1960s.

The Snowshoe Mine (T 28 N, R 31 W, Sec. 7) is approximately 16.5 miles southeast of Libby in Lincoln County. It sits at the head of the Snowshoe Creek drainage, a tributary of Big Cherry Creek which flows into the Kootenai River. The nine-acre reclamation project lies within the Kootenai National Forest (KNF) and is adjacent to the Cabinet Mountains Wilderness area. The majority of the site is located on patented claims; however, a small portion overlaps onto the KNF.

The DEQ, in cooperation with the U.S. Forest Service (USFS), plans to remove tailings from the banks of Snowshoe Creek and deposit them in a repository on USFS property. The largest of the four waste rock dumps will be treated in place and the remainder of the small waste rock dumps will be left as they are because of their inaccessibility. The goal of the project is to reduce or eliminate the impact to human health and the environment. Under the preferred reclamation alternative, human health risk will be reduced by 64 percent and ecological risk will be reduced by 83 percent, an overall risk reduction of 74 percent.

DEQ plans to develop the repository and construct access roads during the 2006 construction season; DEQ will remove the tailings, cover the waste rock, and revegetate the site during 2007.

**Technical Assessment**

The Snowshoe Mine site is No. 9 on the DEQ Mine Waste Cleanup Bureau (MWCB) priority sites list. The site ranking is based on elevated concentrations of antimony, arsenic, cadmium, copper, iron, lead, mercury, and zinc in tailings and waste rock. Furthermore, an intermittent tributary to Snowshoe Creek contained cadmium, lead, and zinc at concentrations greater than the acute aquatic life criteria. The maximum contaminant level (MCL) was exceeded for cadmium in the intermittent tributary and in Snowshoe Creek downstream from the mine. The DEQ MWCB completed a reclamation investigation to characterize the magnitude of metals contamination and the extent and volume of mine wastes. The results of the investigation are summarized in the April 2005 Draft Snowshoe Mine Site Expanded Engineering Evaluation/Cost Analysis (EEE/CA). Included in the EEE/CA are the investigation results, human health and ecological risk assessments, and a detailed evaluation of potential reclamation alternatives.

The reclamation investigation identified one tailings pile and four waste rock piles within the Snowshoe Creek watershed. Five tailings samples, six waste rock samples, 10 stream sediment, and 10 surface water samples were collected. The samples from the tailings piles, waste rock piles, and stream sediment contained metal concentrations above background concentrations. Acid-base accounting also suggests that some of the waste rock has acid generation potential. The stream water contained metals at concentrations greater than the Montana numeric water quality standards and chronic aquatic life criteria.

Risk assessments were completed for residential use, recreational use, and for ecological receptors. The residential risk assessment demonstrated that the observed metals concentrations result in unacceptable risks to potential residents. Likewise the recreational risk assessment demonstrated that the observed metals concentrations result in unacceptable risks to potential recreational users. The ecological risk assessment demonstrated that the metals concentrations in sediment and surface water may adversely affect aquatic life and that the concentrations of metals in mine waste may adversely affect vegetation.

The reclamation investigation identified a total of 85,300 cubic yards of tailings covering an area of approximately 7.3 acres. Approximately 14,525 cubic yards of tailings covering 1.5 acres is located on USFS land. In addition, approximately 36,860 cubic yards of waste rock cover an area of 2.80 acres. A preliminary screening of all potential reclamation alternatives was completed in the EEE/CA. The preliminary screening identified seven alternatives that could be used to address the wastes present at the site. The potential alternatives ranged from no action and institutional controls to on-site disposal in several different repository types to off-site disposal at a landfill. The preferred reclamation alternative was on-site disposal of the tailings in a constructed repository, in-place containment of the largest waste rock pile, and no action at three smaller waste rock piles.

Reclamation of the Snowshoe Mine cannot be completed by an entity other than the DEQ MWCB. The mine waste is primarily on private land which prevents federal agencies like the USFS from completing the work. The private owners of the land are not the same entities who completed the mining and they lack the financial resources necessary to complete the project. While the $300,000 Reclamation and Development Grants Program (RDGP) funding is only 16 percent of the total project costs, the RDGP funds will allow the DEQ MWCB to fund cleanup at one of the hundreds of other abandoned mine sites.

**Financial Assessment**

The total overall budget is only for contracted services. All DEQ MWCB and USFS staff salaries, benefits, travel, and equipment will be paid for by DEQ and the KNF, respectively. Costs presented in the EEE/CA are typical for mine reclamation projects. The estimated cost for the preferred alternative was $1,842,004 in 2005.

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Contracted Services | $ 300,000 | $ 1,542,004 | $ 1,842,004 |
| **Total** | **$ 300,000** | **$ 1,542,004** | **$ 1,842,004** |

**Environmental Evaluation**

Removal of the tailings and placement in an on-site repository would substantially reduce the long-term potential risks to humans, terrestrial animals and plants, and aquatic organisms. Likewise, in-place reclamation of the large waste rock pile would reduce the potential for erosion and exposure of potential human and environmental receptors. Short-term risks will be associated with construction activities. However, these risks can be mitigated though compliance with project design and specifications as well as safe-work practices. Short-term degradation of water quality may occur in Snowshoe Creek; however, long-term benefits will be substantial.

**Public Benefits Assessment**

The Snowshoe Mine site is No. 9 on the Montana DEQ MWCB priority sites list. The project is on private land and the principal public benefit will be improved water quality in Snowshoe Creek and elimination of the migration of mine wastes onto nearby public land. The project could also provide public benefit through the creation of new habitat for game and nongame animals and through reducing potential risks to recreational users of the property.

**Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 4**

| | | |
|---|---|---|
| **Applicant Name** | Montana Department of Environmental Quality (DEQ) | |
| **Project Name** | Bald Butte Mine and Millsite Reclamation Project | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Source** | $ 2,700,000 | Applicant |
| **Total Project Cost** | $ 3,000,000 | |
| **Amount Recommended** | $ 300,000 | |
| **Project Abstract** | (Prepared and submitted by applicant) | |

The Bald Butte Mine and Millsite and Devon/Sterling and Albion mines project is approximately 17 miles northwest of Helena, near the headwaters area of Dog Creek. The headwaters of the basin are on the west side of the Continental Divide, southwest of the historic mining community of Marysville. The project encompasses the western portion of the Marysville Mining District and includes the Bald Butte Mine and Millsite tailings and waste rock areas, and the Devon/Sterling and Albion mines waste rock area. The Bald Butte Mine and Millsite tailings and waste rock site is No. 11 on the DEQ Mine Waste Cleanup Bureau (MWCB) priority sites list. The Devon/Sterling and Albion mines are not ranked on this list.

The Bald Butte Mine and Millsite and the Devon/Sterling and Albion mines are approximately 3.8 and 3.0 air miles, respectively, southwest of Marysville in Lewis and Clark County, within the E ½ of Section 9, NW ¼ of Section 10, E ½ of Section 16, and NE ¼ of Section 21, Township 11 North and Range 6 West, Montana Principal Meridian. The sites are within the Dog Creek drainage, a tributary of the Little Blackfoot River. Several possible routes access the site. The most accessible route is west on Highway 12 from Helena over MacDonald Pass. Near the bottom of MacDonald Pass, turn right on Dog Creek Road, which becomes Forest Road 1855, and follow it for approximately 12.8 to 13.5 miles, respectively, to the millsite and mines.

The MWCB would conduct mine reclamation; mine waste would be consolidated into a single mine waste repository with an impermeable bottom liner and a cap placed over the repository area, thereby eliminating receptor contact with the contaminated mine wastes. After reclamation activities are complete, the site will be revegetated with native plant species. Project construction is estimated to take 90 days.

**Technical Assessment**

The Bald Butte Mine and Millsite tailings and waste rock site is No. 11 on the Montana DEQ MWCB priority sites list. The site ranking is based on elevated concentrations of arsenic, cadmium, copper, lead, mercury, and zinc in tailings and antimony, arsenic, cadmium, copper, iron, lead, and zinc in waste rock. Furthermore, Dog Creek flows through the tailings resulting in exceedance of the chronic aquatic life criteria for lead. The DEQ MWCB completed a reclamation investigation to characterize the magnitude of metals contamination and the extent and volume of mine wastes. The results of the investigation are summarized in the December 2004 Expanded Engineering Evaluation/ Cost Analysis (EEE/CA) for the Bald Butte Mine and Millsite and the Devon/Sterling and Albion mines. Included in the EEE/CA are the investigation results, human health and ecological risk assessments, and a detailed evaluation of potential reclamation alternatives.

The reclamation investigation identified six tailings piles and seven waste rock piles within the Dog Creek watershed. Eighteen tailings samples, 13 waste rock samples, and 44 stream sediment samples were collected. The samples from the tailings piles, waste rock piles, and stream sediment contained metal concentrations above background concentrations. Acid-base accounting also suggests that some of the waste rock has acid generation potential. The stream water contained iron and manganese at concentrations greater than the federal secondary maximum contaminant level.

Risk assessments were completed for residential use, recreational use, and for ecological receptors. The residential risk assessment demonstrated that the observed metals concentrations result in unacceptable risks to potential residents. Likewise, the recreational risk assessment demonstrated that the observed metals concentrations result in unacceptable risks to potential recreational users. The ecological risk assessment demonstrated that the metals concentration in sediment may adversely affect aquatic life and the concentration of metals in mine waste may adversely affect deer and vegetation.

The reclamation investigation identified 65,220 cubic yards of tailings covering an area of approximately 11.32 acres. In addition, approximately 3,550 cubic yards of waste rock covers an area of 0.30 acres. A preliminary screening of all potential reclamation alternatives was completed in the EEE/CA. The preliminary screening identified eight alternatives that could be used to address the wastes present at the site. The potential alternatives ranged from no action and institutional controls to on-site disposal in several different repository types to off-site disposal at regular or hazardous waste landfills. The preferred reclamation alternative was on-site disposal of the tailings and waste rock in a constructed modified Resource Conservation and Recovery Act (RCRA) repository.

Reclamation of the Bald Butte Mine and Millsite and Devon/Sterling and Albion mines cannot be completed by an entity other than the DEQ MWCB. The mine waste is on private land which prevents federal agencies like the U.S. Forest Service (USFS) from completing the work. The private owners of the land are not the same entities who completed the mining and they lack the financial resources necessary to complete the project. While the $300,000 RDGP funding is only 10 percent of the total project costs, the RDGP funds will allow the DEQ MWCB to fund cleanup at one of the hundreds of other abandoned mine sites.

**Financial Assessment**

The total overall budget is only for contracted services. All DEQ MWCB staff salaries, benefits, travel, and equipment will be paid for by DEQ. Costs presented in the EEE/CA are typical for mine reclamation projects. Estimated costs for the preferred alternative were $2,858,019 in 2004. Unit cost increases for numerous tasks could well make the estimated 2006 costs exceed $3 million.

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Contracted Services | $ 300,000 | $ 2,700,000 | $ 3,000,000 |
| **Total** | **$ 300,000** | **$ 2,700,000** | **$ 3,000,000** |

**Environmental Evaluation**

Removal of the tailings and waste rock and placement in an on-site repository would substantially reduce the long-term potential risks to humans, terrestrial animals and plants, and aquatic organisms. Short-term risks will be associated with construction activities. However, these risks can be mitigated through compliance with project design and specifications as well as safe-work practices. Short-term degradation of water quality may occur in Dog Creek; however, long-term benefits will be substantial.

**Public Benefits Assessment**

The Bald Butte Mine and Millsite tailings and waste rock site is No. 11 on the Montana DEQ MWCB priority sites list. The project is on private land and the principal public benefit will be improved water quality in Dog Creek and elimination of the migration of mine wastes onto nearby public land. The project could also provide public benefit through creation of new habitat for game and nongame animals and through reducing potential risks to recreational users of the property.

**Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 5**

| | |
|---|---|
| **Applicant Name** | Montana Department of Natural Resources and Conservation (DNRC), Water Resources Division (WRD) |
| **Project Name** | St. Mary Facilities Rehabilitation |
| **Amount Requested** | $ 300,000 |
| **Other Funding Source** | $ 7,725,000 Congress |
| **Total Project Cost** | $ 8,025,000 |
| **Amount Recommended** | $ 300,000 |
| **Project Abstract** | (Prepared and submitted by applicant) |

The St. Mary Facilities, on the Blackfeet Indian Reservation, transfer water from the St. Mary River Basin to the Milk River Basin. The facilities have operated for over 89 years with only minor repairs and improvements. The structures have exceeded their design life and critically need major repairs or replacement. Major structures consist of Sherburne Dam, St. Mary Diversion Dam and headworks, 29 miles of canal, St. Mary and Hall Coulee steel siphons, and five concrete drop structures. The siphons are plagued with slope stability problems, metal fatigue, concrete deterioration, and leaks. The concrete drop structures are severely deteriorated. Landslides along the canal route and numerous structural deficiencies make the canal unstable and restricted, and most of the wasteways are inoperable. The canal capacity has declined from its 850 cfs design to 670 cfs. The economy and culture of the entire Hi-Line region was built around, and depends on, this water supply. Without accelerated local, state, and federal action to rehabilitate these facilities, the likelihood of a catastrophic failure is greatly increased.

State and local efforts, spearheaded by the Lieutenant Governor's and Governor's offices, are aggressively seeking federal funding for preplanning, design, and construction activities at these facilities.

Success of the overall project hinges on federal appropriations from Congress. The state-formulated proposal is separated into two phases:

- Phase 1: Planning and Design ($8,025,000); and
- Phase 2: Construction (St. Mary) (estimated $135 million).

The Phase 1 appropriation request has been drafted and submitted to Sen. Conrad Burns. The Reclamation and Development Grants Program (RDGP) funds would provide a state match contribution for Phase 1. Legislation addressing the Phase 2 proposal was submitted to Legislative Drafting Services in March 2006.

Phase 1 will be managed by the DNRC; Phase 2 is expected to be managed by the U.S. Bureau of Reclamation (USBR)/DNRC, either of which could assume the lead-agency role. Both agencies have the full complement of necessary staff and expertise to manage the overall project. An aggressive five-year completion schedule for Phases 1 and 2 has been initiated by the state in an effort to avert a catastrophic failure.

**Technical Assessment**

The overall project goal of reauthorization and rehabilitation of St. Mary and other Milk River facilities will be accomplished through successful implementation of the following objectives:

1. Secure federal appropriations. The most recent news from Sen. Burns' office indicates the original appropriation request of $15,450,000 for Phase 1 has been trimmed to $7 million. Realistically, this amount will probably change before a vote in the full Senate and House. However, barring major shortfalls from this amount, the project should be able to proceed according to the existing timetable of 2009 for completion of Phase 1. The Phase 2 federal request has also been drafted and submitted and work on an introduced bill is under way.

2. Complete the necessary engineering, economic, and environmental studies necessary for congressional support and reauthorization for rehabilitation construction. The major studies (some already in progress) include:
   - Engineering studies with selection of a preferred alternative;
   - National Environmental Policy Act (NEPA) compliance which is required on all federal projects;
   - Cultural resource survey to identify and protect cultural artifacts;
   - Economic analysis that examines the regional net economics of the Milk River Project and paves the way for reallocation of operation and maintenance (O&M) and construction cost among all water users in the Milk River Basin, not just the irrigators; and
   - Canal right-of-way issues on the Blackfeet Indian Reservation.
3. Defray costs associated with state and the St. Mary Rehabilitation Working Group (SMRWG) coordination expenses. Travel to attend meetings with basin stakeholders, state and federal officials, and congressional staff comes at a substantial cost without which the project would be unlikely to sustain the momentum and support gained thus far.
4. Reauthorization of the Milk River Project Reserve Works. Montana submitted legislation to Sen. Burns' office in March 2006. This legislation is intended as the tool that opens doors for creative funding, project sustainability, direction for USBR, and rehabilitation construction.
5. Rehabilitate the St. Mary Diversion Facilities. Attainment of this preferred alternative will rest on securing adequate federal funding not only for Phase 1 planning and design, but also Phase 2 construction. Several other project alternatives are being evaluated. All appear cost prohibitive and are likely to be officially rejected during the NEPA compliance process. Public support remains strong despite minor setbacks on the project schedule due to delays in federal funding. The entire congressional delegation also expressed strong support for this project. Due to the deteriorating condition of the St. Mary facilities, emergency repair may be necessary; in this case, all or a portion of the RDGP funds would be allocated to this effort.

Much is at stake both economically and environmentally, not only for residents of the entire Milk River Basin but also for the state of Montana. From an RDGP standpoint, abandonment of the project is not feasible. The project aptly fulfills the definition of a critical state need and is a high priority for use of RDGP funds.

**Financial Assessment**

The total cost for this Phase 1 proposal is estimated at $8,025,000. The state portion, $300,000, will come from RDGP funds. The federal portion of this proposal is $7,725,000. This funding request was submitted to Sen. Burns' office in February 2006. As stated in the Technical Assessment, round one of this federal request has met with some success. This spending plan includes nine major components. Four of them will utilize RDGP funds (excluding actuation of emergency contingency) as outlined below.

**St. Mary Phase 1 Activities and Costs**

| Expense Item | RDGP | Federal Appropriations | Combined RDGP & Federal |
|---|---|---|---|
| Expand Economic Analysis to Examine Regional and State Economic Benefits | $ 10,000 | $ 0 | $ 10,000 |
| Milk River Infrastructure Investigation | $ 0 | $ 500,000 | $ 500,000 |
| Fort Belknap Rural Water Investigation | $ 0 | $ 600,000 | $ 600,000 |
| NEPA EIS | $ 110,000 | $ 4,250,000 | $ 4,360,000 |
| Blackfeet Cultural Resources and Environmental Review | $ 0 | $ 500,000 | $ 500,000 |
| Blackfeet Vocational Training | $ 0 | $ 375,000 | $ 375,000 |
| Blackfeet Irrigation Project Investigation | $ 0 | $ 500,000 | $ 500,000 |
| Engineering Services | $ 130,000 | $ 1,000,000 | $ 1,130,000 |
| State and SMRWG Coordination Expenses | $ 50,000 | $ 0 | $ 50,000 |
| **Total** | **$ 300,000** | **$ 7,725,000** | **$ 8,025,000** |

Although not included as part of this grant proposal, the following points are worthy of mention. The 2005 Montana Legislature awarded $900,000 through the RDGP to the St. Mary Rehabilitation Project for Phase 1 activities. The RDGP funds were matched by federal appropriations totaling $8.5 million for a new bridge near the St. Mary Siphon; remediation of erosion and sedimentation on Swiftcurrent Creek, Boulder Creek, and Lower St. Mary Lake; and funds earmarked for technical data collection. A $500,000 Treasure State Endowment Program (TSEP) grant was awarded to Glacier County toward a new bridge.

Before the St. Mary Facilities rehabilitation effort, the state of Montana has provided nearly $1.1 million to the Milk River Project over the last 14 years, with about $600,000 in grant funds going toward the St. Mary Division of the project. The state is anticipating $200,000 in renewable resource grant applications in 2006 to be spent on St. Mary Facilities. Keeping the failing facilities operational, while at the same time minimizing over-investment during the authorization process, is a delicate balance.

With the onset of this rehabilitation effort, the state has committed considerable resources toward accomplishing the goals outlined in this application. The state's efforts associated with the rehabilitation coordination process are estimated at $10,000 a month. The state of Montana match (including in-kind) has exceeded $16 million, with a basin match of more than $280,000.

**Environmental Evaluation**

Adverse environmental impacts associated with this project will be minor if they exist at all. Temporary access roads, temporary impacts during geotechnical investigation (drill rig access), dust, and stream crossings by heavy drilling equipment are examples.

The major beneficial impact of the study will be selection of the most cost-effective and best rehabilitation alternatives for construction of the project. The project itself will provide many benefits including water conservation, resource management, and the preservation of an existing facility. Public health will also be beneficially impacted because the Milk River is the source of drinking water for communities along the Hi-Line.

The study will also include a NEPA compliance evaluation and will likely result in the completion of an environmental impact statement.

**Public Benefits Assessment**

This RDGP proposal is an important part of the financial foundation that will secure this water supply, address long-standing environmental issues, provide for more efficient use of Montana's water, stabilize the regional economy, ease the financial burden on irrigators, protect fish and wildlife habitat, and prepare the basin to deal with future water challenges such as Tribal and Canadian water development, water quality issues, and other water management issues.

Water delivered to the Milk River through the St. Mary Facilities is the lifeline of the Hi-Line. The St. Mary Facilities deliver an annual average of 167,000 acre-feet, accounting for more than half of the flows in the chronically water-short Milk River. The economy and culture of the Hi-Line has been built around, stems from, and therefore depends on this reliable water source. Navigating the myriad issues, hurdles, and steps toward rehabilitating the St. Mary Facilities is a complex undertaking. The studies and design will lay the groundwork for rehabilitation, and are the first important and necessary stage to securing this crucial water supply.

Major direct benefits include safe public drinking water for 18,600 people, recreational opportunities, and irrigation on 110,000 acres. Other benefits include fish and wildlife habitat, riparian health aesthetics, and valley culture.

**Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 6**

| | | |
|---|---|---|
| **Applicant Name** | Powell County | |
| Project Name | Milwaukee Roundhouse Voluntary Cleanup | |
| **Amount Requested** | $ 285,380 | |
| **Other Funding Source** | $ 200,000 | U.S.EPA Brownfields Grant |
| **Total Project Cost** | $ 485,380 | |
| **Amount Recommended** | $ 286,000 | |
| **Project Abstract** | (Prepared and submitted by applicant) | |

The Milwaukee Roundhouse site is in Powell County, the NW ¼ of T7N, R9W, Section 4 (N 46° 23.598', W 112° 44.415). The site encompasses 14.5 acres of commercial property at the end of Kentucky Street immediately adjacent to the Deer Lodge city limits. The northernmost portion of the site (not included in the 14.5 acres) is privately owned and will be cleaned up using private funding not addressed in this application. The site abuts the Clark Fork River on the east side and is across the river from the recently developed River Park System. From 1908 until 1980, the site was used for railroad locomotive repairs that led to widespread soil and limited groundwater contamination with petroleum products and, to a lesser extent, chlorinated solvents. Since the bankruptcy of the owners in 1980, the site has sat vacant and unusable. The Department of Environmental Quality (DEQ) classified the site as a high-priority Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site.

Limited funding has prevented the state from proceeding with cleanup of the site. In 2005, Powell County took title and has pursued funding for partial site cleanup through the U.S. Environmental Protection Agency (EPA) Brownfields Program. Powell County, as the project sponsor, has also developed a Voluntary Cleanup and Redevelopment Act (VCRA) plan to address site cleanup. Additional funding through the Montana Department of Natural Resources and Conservation (DNRC) Reclamation and Development Grants Program (RDGP) is critical to allow for a complete cleanup of the site and removal from the DEQ CECRA list. With full funding from the two grant programs, cleanup of the site can be completed within two years and will allow redevelopment of the property to include a job-training center for environmental services careers. Reclamation and remediation activities present one of the best opportunities for long-term employment in this region.

**Technical Assessment**

The Deer Lodge Milwaukee Roundhouse (DLMR) site is a CECRA state superfund facility being cleaned up under the VCRA. The fuel containment area was investigated in 1988 and a report detailing potential remedial options was prepared in 1989. For DEQ, a site inspection was completed in 1990, a Hazard Ranking System (HRS) prescore report was prepared in 1991, and an expanded site inspection was completed in 1993. A supplemental investigation was completed in 2005 for Powell County. The various investigations included collection of surface and subsurface soil samples, installation of monitoring wells, collection of groundwater samples, and collection of surface water and sediment samples. The investigations revealed soil contamination associated with an oil separator, underground concrete fuel tank, and a sump. A draft Voluntary Cleanup Plan (VCP) was submitted to the DEQ in 2006 to address the roundhouse portion of the CECRA site. The VCP proposes to remove debris present at the facility and soil contaminated with bunker C and diesel fuel. The VCP does not address the chlorinated solvent, iron, and manganese contamination in the groundwater. The DEQ has provided numerous comments on the VCP that will need to be addressed before VCP approval. Even so, the DEQ believes this project is worthy of funding and this grant is necessary for Powell County to complete the project.

The project area is adjacent to the city limits of Deer Lodge. If funded, Powell County plans to turn a portion of the site into a job-training center. The remainder of the site would be rehabilitated to remove current risks to the public. If the project is not funded the land will remain a debris-laden abandoned industrial site hazardous to public health

and welfare for years to come. The potential benefits of the project, when weighed against the alternative of leaving the land as an abandoned industrial facility, clearly indicate that the project is a worthwhile investment.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Contracted Services | $ 285,380 | $ 197,000 | $ 482,380 |
| Travel | $ 0 | $ 2,292 | $ 2,292 |
| Equipment | $ 0 | $ 708 | $ 708 |
| **Total** | **$ 285,380** | **$ 200,000** | **$ 485,380** |

The RDGP funds will be used to excavate soils, haul soils to the Butte landfill, dispose of the soils, and grade and backfill the site. No applicant contribution costs are listed in the application, but it is likely that Powell County staff will spend the time required by this project for contractor oversight and grant administration. The application requests only $15,000 for DEQ oversight. Given the scope and complexity of DEQ's comments on the first draft of the VCP, it is likely that a minimum of two more drafts will be required resulting in another $25,000 to $35,000 in DEQ oversight costs.

The cost estimate in the application is confusing. On page 11, the description of alternative 4 states that approximately 13,500 cubic yards of material will be excavated and disposed of off-site. On page 15, the tasks specific to the RDGP list excavation of 45,000 cubic yards of material and off-site disposal of 8,000 cubic yards. The disparity in volumes is explained only in the detailed cost estimate where 13,500 cubic yards will be excavated but only 8,000 cubic yards will require off-site disposal. The applicant estimates that 5,500 cubic yards will have contaminant concentrations below the risk-based screening level standards and not require off-site disposal. It is unclear from the application if the 5,500 cubic yards is included with the 45,000 cubic yard total.

The adjusted unit cost for excavation and disposal of 8,000 cubic yards at $28.75 per yard is an approximate estimate. The unit cost of $1.25 per cubic yard for excavation of soil is likely low; other projects of similar size have excavation costs from $2 to $3 per cubic yard.

The grant application appears to have underestimated costs of DEQ oversight and possibly certain aspects of the excavation work.

**Environmental Evaluation**

Removal of the debris and contaminated soil would substantially reduce the long-term potential risks to humans and the environment. Short-term risks will be associated with construction activities. However, these risks can be mitigated though compliance with project design and specifications as well as safe-work practices. Short-term degradation of water quality may occur in Tin Cup Joe Creek. However, long-term benefits will be substantial.

**Public Benefits Assessment**

The DEQ lists the DLMR site as a high priority CECRA site. The project is on public land and the principal public benefit will be construction of the job-training center and elimination of risks to humans and the environment.

**Recommendation**

A grant of up to $286,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 7**

| | | |
|---|---|---|
| **Applicant Name** | Montana Department of Natural Resources and Conservation (DNRC) | |
| **Project Name** | Reliance Refinery | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Sources** | $ 68,240 | Applicant |
| | $ 620,529 | General Fund |
| **Total Project Cost** | $ 988,769 | |
| **Amount Recommended** | $ 300,000 | |

**Project Abstract** (Prepared and submitted by applicant)

Kalispell Pole & Timber, Reliance Refinery, and Yale Oil Facilities comprise a state superfund Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site under the regulatory authority of the Montana Department of Environmental Quality (DEQ). The site is in Kalispell. The state of Montana owns the Reliance Refinery site and leased it out for refinery operations from the 1930s to the 1960s. The state was one of several potentially liable parties sued by the DEQ under state superfund law. CECRA statutes encourage settlement of claims. The state of Montana, through the DNRC TLMD negotiated a settlement agreement with the DEQ, which acknowledged the state's partial liability for site remediation and indemnified the state from cross-claim litigation from other potentially liable parties. Pursuant to the CECRA, any such settlement must be made available for review and comment by other potentially liable parties and the public and must also be approved by the court having jurisdiction. Burlington Northern & Santa Fe Railroad (BNSF), also a potentially liable party, opposed the court's approval of the DNRC DEQ consent decree, alleging it was favorable to the state as landowner, and adverse to the BNSF. The Montana First Judicial District Court reviewed the consent decree and BNSF's opposition testimony and exhibits and approved the DNRC DEQ consent decree on March 24, 2006.

The DEQ is proceeding with remediation activities at the site. These activities recently entailed data collection and summarization, and currently consist of completion of a resource inventory/risk assessment/feasibility study (RI/RA/FS). Pursuant to the consent decree, the state is liable for 27.5 percent of invoiced remediation costs. Upon completion of the RI/RA/FS, DEQ will evaluate the alternative remediation methods, select the remediation option that optimally meets the goals and objectives for remediation under the CECRA, and produce a record of decision (ROD). This, in turn, provides the basis upon which to prepare a detailed site remediation plan and solicit bid proposals for the selected remediation plan. The DEQ estimates these tasks will be complete or nearly complete by FY 2009.

The DEQ invoices liable parties for its costs, unless the costs are covered by other direct sources of funding. The DNRC TLMD's settlement agreement with the DEQ resulted in a negotiated settlement of $126,890 for the state's share of costs invoiced through December 31, 2004. The department has already paid $50,000 of this obligation. Per the settlement agreement, the state is responsible for 27.5 percent of invoiced costs after January 1, 2005.

The state's share of remediation costs through final design and contracting is estimated to total approximately $990,000. This grant request is intended to cover a portion of the department's share of invoiced costs through FY 2009.

**Technical Assessment**

Under provisions of state superfund law (75-10-705, MCA), DEQ will administer and have oversight of all project cleanup activities. As a result of the consent decree, the project is decidedly straightforward. The state of Montana is liable for its proportionate share of all cleanup costs. The major issue facing DEQ/DNRC/state of Montana centers on what funding source(s) is/are used to meet this court-mandated obligation as described in the Abstract. The Reclamation and Development Grants Program (RDGP) is one feasible option for a portion of the required

obligation. The other major option is the General Fund. Legislators must determine what source of funding (or combination of funding) is in the best interests of Montana. Noteworthy in this particular project is a clause found in the RDGP statute (90-2-1112[5], MCA). This provision states, "A proposed project is not eligible for funding under the reclamation and development grants program if there is a liable party who would be relieved of financial or legal responsibility and who can reasonably be expected to be held responsible." RDGP would argue that this provision is moot since the state of Montana will ultimately pay for its share of remedial costs regardless of what funding source is used or which agency is designated to pay these costs on behalf of the state. Ultimately, it seems that using RDGP, or not, is an issue of legislative prerogative.

**Financial Assessment**

DNRC/DEQ estimated remedial costs for this project based on comparisons with similar sites. Such costs, conducted under the authority of CECRA, are typically higher than conventional design/construction projects.

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 0 | $ 134,478 | $ 134,478 |
| Fringe Benefits | $ 0 | $ 44,826 | $ 44,826 |
| Contracted Services | $ 300,000 | $ 376,696 | $ 676,696 |
| Communications | $ 0 | $ 300 | $ 300 |
| Travel | $ 0 | $ 1,000 | $ 1,000 |
| Miscellaneous | $ 0 | $ 131,469 | $ 131,469 |
| **Total** | **$ 300,000** | **$ 688,769** | **$ 988,769** |

Matching funds include a DNRC match of $18,240 for in-kind services and DNRC obligation for past remedial costs under the settlement agreement already paid ($50,000). The balances of matching funds are the costs to liable parties by DEQ for actual and expected expenses through 2009.

The budget is typical of a DEQ-administered project under superfund and reasonable if the project is conducted in a timely manner.

**Environmental Evaluation**

For this project, DEQ is responsible for compliance with all environmental standards, regulations, and statutes dealing with protection of health, safety, environment, and public welfare. The transfer of funds from RDGP to DEQ in itself has no environmental impact.

**Public Benefits Assessment**

Remediation of this site is designed to protect human health, safety, public welfare, and the environment. The cleanup of contaminated soils and groundwater benefits all Montanans in the long-term. Of lesser impact, the project will result in short-term economic impact to remedial action contractors and suppliers.

**Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 8**

| | | |
|---|---|---|
| **Applicant Name** | Central Montana Regional Water Authority | |
| **Project Name** | Utica Well 2 | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Source** | $ 450,000 | Applicant |
| **Total Project Cost** | $ 750,000 | |
| **Amount Recommended** | $ 300,000 | |

**Project Abstract** (Prepared and submitted by applicant)

The project area lacks a consistent, clean, and healthy source of municipal and domestic water for multiple cities and towns within central Montana.

The goal of this project is to develop a method of accessing a proven municipal deep water source and securing additional water rights for the region. The objectives are to provide a final engineering design for a deep well, drill the well, case the well, and pump test and analyze effects of the new well on the test well at the same location.

This project is sponsored by and will be carried out by the Central Montana Regional Water Authority with assistance of experienced staff from Central Montana Resource Conservation & Development, Inc. (RC&D).

The project is north of Utica in the NW1/4, SW1/4, Section 16, T14N, R13E. The target formation for the well is the Madison Limestone at a depth between 3,700 and 4,000 feet. This well will serve as one of a group of at least three wells to provide municipal water to communities in the five-county area, including the towns of Hobson, Judith Gap, Harlowton, Ryegate, Lavina, Broadview, Roundup, and Melstone. The well source water, as proven by an adjacent test well completed in November 2005, will be piped to the above communities, as later phases of the overall concept are developed. The quality of the water from this site will eliminate the need for major water treatment, thereby reducing cumulative operation and maintenance (O&M) costs and conserving 25 percent to 30 percent of water required by eliminating the waste created by conventional treatment.

Water well drilling design and development should be completed within 12 months of start-up.

**Technical Assessment**

This project requests funding to drill a regional municipal water production well into the Madison Limestone to provide clean drinking water to eight communities in a five-county area. Municipal water supplies in these communities are inadequate due to poor water quality, water supply, and water treatment. This well will be one of several installed as part of the Central Montana Regional Water System. A test well has already been completed in the area of the proposed production well and has documented sufficient water availability and quality.

The applicant adequately documented the problem history and previous investigations. Many documents such as reports, letters of support, and public meeting minutes were provided to support the application. The cost-benefit analysis lacked detail in comparing the cost of the project relative to the potential benefits. However, the municipalities to which the costs and benefits would apply were clearly defined.

Since this project is part of an ongoing project, specific alternatives were not provided in the application, but rationale for the preferred action was provided in supporting documents. The potential to supply municipal water from Big Spring near Lewistown was evaluated as cost-prohibitive. The applicant demonstrated adequate need and urgency for supporting the project. Supporting documents accompanying the application were abundant and detailed. The administration and staff for the project have adequate experience to carry out the project.

The goals/objectives outlined in the application were clearly stated and adequate for this project. Task descriptions provided adequate detail to properly evaluate the application. Deliverables for this project are a completed production well drilled into the Madison Limestone, an associated pump test, and the submittal of necessary water rights documentation. The project schedule is detailed and realistic, based on previous experience and estimates provided in supporting documents.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Contracted Services | $ 300,000 | $ 450,000 | $ 750,000 |
| **Total** | **$ 300,000** | **$ 450,000** | **$ 750,000** |

Grant funds will be used to design and install a well approximately 4,000 feet deep. Matching funds provided by the applicant include state and federal funds that have not been awarded as of the application due date. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. All funds will be applied to drilling and engineering costs, with a contingency and inflation factor included. Based on information in the supporting documents, this alternative is the most cost-effective for providing a high-quality municipal water supply to the region.

**Environmental Evaluation**

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to the communities that will receive an improved water supply from the completed well. Secondary benefits include data and information relating to the development of future drilling projects in the Madison Limestone. Minimal short-term, construction-related impacts (from drilling and installation of the well) will be controlled through permitting, landowner access permission, and proper construction methodology.

**Public Benefits Assessment**

The proposed project will benefit approximately 4,500 Montana residents in five counties. The project will provide positive impacts for area residents, farmers, ranchers, and tourists. The well developed during this project will provide a clean, potable source of water to citizens who currently use water with high concentrations of many secondary contaminants. Montanans will benefit both directly and indirectly from this project. Temporary and permanent jobs will be created during construction and operation phases of this project. This project also develops a Montana natural resource that will help stimulate economic development in the region.

**Funding Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 9**

| | | |
|---|---|---|
| **Applicant Name** | Montana Board of Oil and Gas Conservation (BOGC) | |
| **Project Name** | Southern District Tank Battery Cleanup, Orphaned Well Plug and Abandonment, and Site Restoration | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Source** | $ 4,847 | Applicant |
| **Total Project Cost** | $ 304,847 | |
| **Amount Recommended** | $ 300,000 | |

**Project Abstract** (Prepared and submitted by applicant)

The purpose of this grant request is to provide funding to properly restore an orphaned and improperly abandoned tank battery facility, remove contaminated soils, and perform surface reclamation at this site. The tank battery site has the potential of causing damage to the groundwater, surface water, and the surface at the site.

The BOGC will eliminate the threat of contamination by soliciting bids to reclaim this improperly abandoned tank battery site. Under supervision of the board's staff, the successful bidder will dig up the site, remove the buried tanks and equipment, dispose of and/or remediate contaminants, and reclaim the surface location.

The former operator could no longer afford to produce the wells, so the wells were plugged and the battery abandoned. Since the company is long since defunct, responsibility for the battery site and any potential environmental damage rests with the BOGC and the state. The battery site will be properly cleaned up when funding is made available.

The orphaned battery site is near Big Wall field, about 13 miles northeast of Roundup. By prioritizing the board's list of orphaned wells and orphaned sites, in most cases the site that presents the highest potential for damage to the environment will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following availability of funding.

**Technical Assessment**

Petroleum-contaminated soils removed from an excavation may be remediated by several accepted methods including:

- Disposal at an approved landfill;
- Landfarming;
- Recycling by incorporation into an asphalt batch plant or thermal treatment;
- On-site treatment and re-use; and/or
- Off-site re-use.

Based on the information provided, examination of these alternatives suggests landfarming as the most feasible and preferred option for this site. Should baseline sampling and analysis detect hazardous waste, disposal off-site would be mandatory. Other conditions such as depth to groundwater, soil type, distance to wells or surface water, and soil chemistry may also preclude this landfarm option, either partially or completely. To the applicants' credit, the grant request budget includes funds for further investigation.

Landfarming remediates petroleum-contaminated soil by spreading it out on the site where generated, and allowing microbes in the soil to degrade the petroleum. Design and operation rely on the ability of the site to physically accommodate these operations, adequate berm and liner to ensure contaminant containment, a process to turn the

soil and enhance biodegradation, and a sampling and monitoring plan. The BOGC has adequately addressed these design components as part of the preferred alternative site remediation work plan.

The site is approximately 2.0 acres and contains an estimated 6,600 cubic yards of contaminated soil materials. An unknown quantity of junk tanks, treaters, and piping is buried or scattered throughout the site. Costs for cleanup are based on an informal bid by an area contractor and seem reasonable, although unknowns may increase the stated cost. A primary concern is whether the landowner will consent to the proposed project. Without landowner approval and resultant landfarming on the landowner's property, the project is probably cost-prohibitive at the requested level. The oil industry has used landfarming for years to remediate noncritical contaminated oil sites using standard practice and technique. The project is not technically difficult and should accomplish the desired results in three to four years.

**Financial Assessment**

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 0 | $ 2,899 | $ 2,899 |
| Employee Benefits | $ 0 | $ 422 | $ 422 |
| Contracted Services | $ 300,000 | $ 0 | $ 300,000 |
| Supplies and Materials | $ 0 | $ 100 | $ 100 |
| Communications | $ 0 | $ 40 | $ 40 |
| Travel | $ 0 | $ 1,386 | $ 1,386 |
| **Total** | **$ 300,000** | **$ 4,847** | **$ 304,847** |

Ideally, the budget could have been better defined based on a thorough investigation of surface and below surface site conditions. For instance, the potential for groundwater/surface water contamination was not addressed, nor was proximity to area wells, soil type, and soil disposal location. Identification of concerns in these areas will stand to raise the cost, although it appears sufficient funds have been requested to address some design contingencies. A payment to the landowner of $18,000 for a two-year surface lease to locate the landfarm on his property is not recommended. If funds remain at project completion, they will be used to plug and abandon orphaned wells listed on the BOGC statewide priority well-ranking system.

**Environmental Evaluation**

Short-term adverse impacts are expected in the majority of construction projects. Plant and soil disruption, increased noise, and dust particulates can be mitigated to acceptable levels during the construction phase. Long-term adverse impacts, or lack thereof, will depend primarily on the landfarm's ability to degrade oil contamination and keep it contained on-site.

**Public Benefits Assessment**

The primary benefit of this project would accrue to the landowner of the affected property. Environmental benefits of a lesser degree would be realized by the public since wildlife habitat, soil, vegetation, and aesthetics would be improved in the area.

**Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 10**

| | | |
|---|---|---|
| **Applicant Name** | Meagher County Conservation District (MCCD) | |
| **Project Name** | Hydrologic Investigation of the Smith River Watershed, Groundwater/Surface Water Interaction | |
| **Amount Requested** | $ 218,700 | |
| **Other Funding Sources** | $ 0 | Applicant |
| | $ 25,000 | DNRC 223 Grant |
| | $ 196,400 | USGS |
| **Total Project Cost** | **$ 540,100** | |
| **Amount Recommended** | $ 300,000 | (A $100,000 RRGL Grant will not be funded.) |

**Project Abstract** (Prepared and submitted by applicant)

This project is an investigation of the groundwater and surface water interaction within the Upper Smith River Watershed, a tributary of the Missouri River. The Smith River is an important recreational and agricultural area, in Meagher and Cascade counties in west-central Montana. Irrigation is the cornerstone of this area's agricultural and economic well-being. Tourism is also important to the economy of the area and the state of Montana, with thousands of visitors traveling to the area annually to float and fish the nationally renowned Smith River.

MCCD has local responsibility to assess local natural resources and to oversee their proper management. MCCD believes strongly that these decisions should be based on scientific information, not perception and/or emotion. The information from this hydrologic investigation is necessary to determine/predict the cumulative impacts that changes from wild flood irrigation to sprinkler irrigation and other water uses will have on the hydrologic system in the Upper Smith River Watershed. The investigation will also determine if use of groundwater for sprinkler irrigation is resulting in reduced flow in the Smith River. MCCD will carry out this project through a partnership with U.S. Geological Survey (USGS).

This four-year study will result in increased understanding of the overall hydrologic system. It will help state and federal agencies, along with the concerned public, to better understand the interaction of the groundwater/surface water, an important component when determining water allocations in the area. The ability to determine if groundwater is or is not "immediately or directly connected" to surface water is a critical component when determining water allocations under Montana law.

Information from this study will enhance the conservation, proper management, and development and/or preservation of a limited water resource. The information will benefit agriculture, fish and wildlife habitat, associated outdoor-based recreation, and the general public. The decisions made as a result of this study will benefit the people in the entire Upper Smith River Watershed, the city of White Sulphur Springs, Meagher County, and the state of Montana through increased understanding of water resources and the ability to make more informed water management decisions. The information gathered and technology may help other watersheds in Montana and possibly other parts of the country.

There is a "crucial state need" to complete this project. Informed decisions and integrated water management planning regarding the future of this public resource cannot be made without scientific understanding.

**Technical Assessment**

The Upper Smith River Watershed, in west-central Montana, supports important recreational and agricultural interests. Recent droughts have impacted both of these interests, resulting in efforts to conserve the limited water supply. During this time, some area irrigators switched from flood irrigation to sprinkler irrigation. This switch has created conflict with some groups in the watershed who feel that flood irrigation may fill shallow aquifers, thus

benefiting the Smith River by helping to sustain streamflows in the late summer. The need for this project stems from the necessity to better understand the relationship between surface water and groundwater, which affects streamflow in the Smith River. The overall goal of this project is to collect data leading to better management decisions and a sustainable river system allowing continuation of both agricultural and recreational activities.

Three alternatives were considered for this project. The no-action alternative would rely on fragmented existing studies that would not answer remaining questions in the watershed. A tracer/discharge study was also evaluated, which would involve injecting a tracer solution into the Smith River and measuring the tracer concentrations at several downstream locations. The tracer/discharge alternative was not chosen because it relies on only one method to characterize a complex system.

The preferred alternative to understanding the interaction between surface water and groundwater is a comprehensive multi-year study addressing numerous components of the Smith River and its tributaries. Measurements will include temperature and specific conductance of the Smith River and its tributaries; stream discharge; stream stage; groundwater levels; temperature modeling; and water chemistry analysis. The goal of this project is to provide data that allows for better water management decisions to maintain a sustainable river system with a balance between agriculture and recreation. Work on this project will begin in July 2007 and continue for 48 months.

The main objectives of this project are to:

- Increase understanding of the interaction between groundwater and surface water in the Upper Smith River Watershed;
- Understand the overall hydrologic system;
- Identify gaining and losing reaches of the Smith River;
- Educate the public about groundwater/surface water interactions; and
- Develop recommended water conservation practices for the Upper Smith River Watershed.

The alternative selected will use multiple tools and an adequate level of effort to characterize and/or measure groundwater and surface water parameters, thus providing a better understanding of the entire system. Other considered alternatives would not accomplish the desired goals and may not provide legally defensible results.

The Meagher County Conservation District administrator will oversee day-to-day management of the grant with assistance from the NRCS district conservationist. The USGS will conduct technical aspects of the project. Based on the qualifications listed in the application, these individuals are qualified to manage the project. Roles of the project manager and other key personnel are clearly defined and reasonable given the project scope. The project manager will coordinate with DNRC, integrate public input, and monitor completion of specific tasks. This project is ready for implementation.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salary and Wages | $ 118,094 | $ 127,656 | $ 245,750 |
| Fringe Benefits | $ 0 | $ 181,900 | $ 181,900 |
| Contracted Services | $ 14,300 | $ 0 | $ 14,300 |
| Supplies and Materials | $ 3,350 | $ 0 | $ 3,350 |
| Travel | $ 27,850 | $ 0 | $ 27,850 |
| Equipment | $ 17,850 | $ 0 | $ 17,850 |
| Miscellaneous | $ 37,256 | $ 11,844 | $ 49,100 |
| **Total** | **$ 218,700** | **$ 321,400*** | **$ 540,100** |

* Includes $100,000 RRGL grant request.

The budget appears reasonable to fund the project. The applicant provided a detailed breakdown of costs and manpower necessary to complete the project. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. The cost provided for the tracer study is lower than the preferred alternative; however, the tracer study would not meet the goals and objectives of the project.

The applicant also submitted a $100,000 RRGL grant application listed as a match for this project. DNRC does not allow projects to receive funding from both programs during the same grant cycle; as a result, it is recommended that the RRGL grant application not be funded. To account for the loss of the RRGL match, it is recommended that RDGP funding be increased to $300,000. This adjustment will result in a budget shortfall of $18,700. Project goals and objectives can still be met with minimal change in scope, or an alternative funding source must be located.

The proposed project will affect the entire Upper Smith River Watershed, which encompasses approximately 1.3 million acres in central Montana. The project will provide positive impacts for area farmers, ranchers, and residents. In addition, tourists and recreationists using the Smith River will benefit from the data gathered.

**Environmental Evaluation**

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Beneficial results are primarily related to collection of significant hydrogeologic data for use in defining groundwater-surface water interaction, and a technical model that will be available to regulatory agencies, other watershed groups, and the general public for use in future decision making. Minimal short-term, construction-related impacts (from installation of monitoring equipment) will be controlled through permitting, landowner access permission, and proper construction methodology.

**Public Benefits Assessment**

The proposed project has the potential to directly and indirectly benefit Montanans. The data collected during this project will directly benefit Montanans living in the Upper Smith River Watershed and indirectly benefit all Montana citizens by sustaining popular fishing and floating recreational resources. Also, the project will help to ensure the long-term quality and quantity of water in the Upper Smith River Watershed. Benefits to public health, safety, and welfare are minimal.

**Funding Recommendation**

The requested grant amount of $218,700 will be increased to $300,000, contingent upon DNRC approval of the project scope of work and budget. A $100,000 RRGL grant application will not be funded.

**Project No. 11**

| | | |
|---|---|---|
| **Applicant Name** | Montana Department of Environmental Quality (DEQ) | |
| **Project Name** | Belt Acid Mine Drainage (AMD) Mitigation | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Source** | $ 1,482,100 | Applicant |
| **Total Project Cost** | $ 1,782,100 | |
| **Amount Recommended** | $ 282,000 | (Funding is recommended for approximately 50 percent of the cost for vertical borehole drilling and grouting underground mine workings.) |

**Project Abstract** (Prepared and submitted by applicant)

The Belt AMD site, an abandoned coal mine, discharges an average of 150 gallons per minute (gpm) of very low pH water laden with iron, aluminum, chromium, cadmium, and other metals into Belt Creek. The Belt AMD results from two draining mine adits, the Anaconda Drain which produces ~140 gpm and the French Coulee Drain which produces ~10 gpm.

The goal of a "source control" solution for the Belt AMD Mitigation project is to improve human health, the environment, and riparian habitat and aquatic life in Belt Creek. This goal would be accomplished by reducing the Belt AMD and metals loading to Belt Creek. Implementing the source control solution to the Belt AMD will be accomplished by reducing the groundwater recharge to the mine workings generating the Belt AMD via land use changes, including crop change; horizontal well installation to dewater shallow aquifers above unflooded mine workings; and grouting selective mine workings locations to isolate flooded areas of the mine from partially or unflooded areas of the mine workings.

The abandoned underground Anaconda Coal Mine site is west of Belt, beneath agricultural land overlooking the Belt Creek drainage (Belt U.S. Geological Survey [USGS] 7.5 Minute Quadrangle). The site encompasses 5.5 square miles of mine workings, both flooded and unflooded by groundwater. Elevation at the Anaconda Coal Mine site is from 3,600 feet to 3,900 feet above mean sea level. Legal description of the site is Township 19 North, Range 6 East, Sections 26, 27, 28, 32, and 33 of the Montana Principal Meridian. Drilling the horizontal wells to dewater shallow aquifers over the unflooded portions of the mine workings and grouting selective mine workings to cut off groundwater flow paths within the mine is estimated to take approximately 300 work days, including drilling the horizontal wells, installing drain pipes, and drilling and grouting flow paths in the mine.

**Technical Assessment**

The primary goal of this project is to control the source of AMD from the abandoned Anaconda Coal Mine site by reducing the groundwater recharge to the mine workings via three primary objectives: (1) land use changes through crop change; (2) horizontal well installation to dewater shallow aquifers above unflooded areas of the mine; and (3) grouting selective mine workings to isolate flooded areas of the mine from partially or unflooded areas.

The application defines the need for source control to help mitigate the flows of AMD from the Anaconda and French Coulee drains. However, the application did not include any of the past groundwater or surface water quality and quantity data, an understandable explanation of the Kootenai formation geology, a cross-sectional diagram of the local geologic formations and strata, nor locations of the two mine drains. In addition, a discussion of the relationship between the mine drain flow rates, the seasons of the year, precipitation, extended droughts, and changes in land use practices in the fields above the mine workings would have been beneficial.

Three alternatives were presented in this application: (1) no action, (2) land use changes, and (3) dewater recharging aquifers. Only alternative 3, which included components for installing two horizontal wells and grouting at four underground mine locations, was discussed in detail. The potential reduction in mine drainage from changing land

use practices was not discussed or evaluated. The cost difference between the two action alternatives was very different ($150,000 versus $1,782,100). Vertical borehole drilling and grouting of mine underground workings are proven and readily implementable practices. The two horizontal wells may provide small reductions in the mine drain flow volumes. However, based on known hydrogeologic and groundwater flow principles, the amount of water captured and drained by these three- to-four-inch diameter wells is minimal. Other alternatives that could have been included, with costs likely between the two presented alternatives, are (1) a shallow soil-water capture system with redirection of collected water away from mine workings, (2) additional bulkhead grouting beyond the four proposed, and (3) intentional collapsing of the underground workings with explosives.

The groundwater quality and quantity technical data that would support the need for this project were not included. The only information provided from a previous phase of this project was that monitoring wells have intercepted flows of 10 to 20 gpm in the water-bearing zones of the Kootenai formation. The relationship of the dirty sandstone, mudstone, basal conglomerate, two water-bearing zones, aquitard zone, soil surface, and the underground mine workings could have been presented in a cross-sectional diagram, along with the potential location of the proposed horizontal wells. The location of the horizontal well, relative to saturated and unsaturated zones above the mine workings and along the entire length of the well, is critical to the effectiveness of the well to capture groundwater and the potential for intermingling of groundwater (cross-contamination) across aquifers.

The Montana Bureau of Mines and Geology (MBMG) has provided some technical support to the DEQ in the past and will be completing the three dimensional (3-D) modeling that will provide the necessary information for placement of the horizontal wells and bulkheads. Groundwater flow modeling and interpretation need to be completed to evaluate the overall technical feasibility of the proposed project. For example, if optimum placement of a horizontal well (essentially a three-inch diameter continuous void or pore space) is modeled to produce a flow of only 2 to 30 gpm, the cost/benefit of the relatively expensive horizontal drilling may be interpreted differently than if the modeled flow is greater than 100 gpm. If 3-D groundwater modeling estimates that higher evapotranspiration rates for a year-round vegetative cover composed of high water-using grasses and trees would potentially reduce deep seepage by 50 percent, then that information would be important for this project.

Most of the technical aspects of this application have merit. However, potential benefits from the costly horizontal drilling cannot be accurately evaluated and may have only minimal effect on the total volume of water that ultimately seeps into the underground mine workings and drains to Belt Creek. The application states that the horizontal wells would be placed above the unflooded portions of the mine workings when, in fact, the greatest volume of captured water could be above flooded portions. Vertical drilling and grouting the underground mine workings are proven mine closure practices and have an excellent chance for helping to reduce the volume of mine drainage.

**Financial Assessment**

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Contracted Services | $ 300,000 | $ 1,482,100 | $ 1,782,100 |
| **Total** | **$ 300,000** | **$ 1,482,100** | **$ 1,782,100** |

No costs for salaries and wages and fringe benefits are included in the Reclamation and Development Grants Program (RDGP) application. The estimated cost of $100 per linear foot for drilling a four-inch diameter horizontal well may be low if a borehole diameter at the entry location is greater than four inches to account for telescoping down to a smaller diameter along the 6,000-foot length. Some backup or reference to a verbal or written quote would be helpful to justify this $1.2 million line item.

Funding is recommended to provide approximately 50 percent of the $564,100 cost for vertical borehole drilling and grouting of the underground mine workings. No funding is recommended for horizontal well installations because costs are high relative to the potential benefit of reduced flows from the two underground mine drains.

**Environmental Evaluation**

Most of the adverse environmental impacts associated with this project are short-term and associated with the field work portion of the project. Drilling and grouting may require mobilization and set-up of heavy equipment and machinery. Potential soil compaction and rutting should be avoided by completing the field work when soils are not wet or saturated. A land use change from crop land to a permanent pasture or a year-round native plant community could adversely affect the agricultural base for landowners. On the other hand, permanent vegetation could provide a long-term increase for grazing and increased habitat for wildlife and birds.

**Public Benefits Assessment**

This project application states that the city of Belt, Cascade County commissioners, local landowners, and the general public have requested and support efforts to mitigate the impacts of AMD to Belt Creek. No verification of this support was confirmed during this grant application review. The alternative that involves changing land use practices on privately owned agricultural lands that sit on top of the mine workings was not specifically evaluated or described as having the support of the actual landowners. The public could benefit from additional wildlife and bird habitat in the areas converted to year-round vegetative cover if the land use is changed for this purpose.

**Recommendation**

A grant of up to $282,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 12**

| | | |
|---|---|---|
| **Applicant Name** | Montana Department of Environmental Quality (DEQ) | |
| **Project Name** | Swift Gulch Placer Tailings and Wetland Establishment | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Source** | $ 13,557 | Applicant |
| **Total Project Cost** | $ 313,557 | |
| **Amount Recommended** | $ 150,000 | (Funding is recommended for constructing the settling ponds; no funding is recommended for constructing the wetland components for water treatment.) |

**Project Abstract** (Prepared and submitted by applicant)

The Swift Gulch watershed originates near the Landusky Mine and flows northwest, joining South Bighorn Creek about 2,000 feet up-gradient of the Fort Belknap Indian Reservation boundary. Mineral extraction has occurred within this watershed since the late 1800s, and has included development of small adits, extensive placer mining throughout the length of the creek channel, and recent open pit mining along the drainage divide between Swift Gulch and King Creek to the south.

Pegasus Gold Corporation (PGC) conducted open pit mining at the Landusky Mine between 1979 and 1996. PGC declared bankruptcy in 1998, and the DEQ now operates water treatment systems at the site, using funds from short-term water treatment bonds that had been posted by PGC. Significant deterioration of water quality in Swift Gulch was first noted in 1999. Because impaired water quality in Swift Gulch became evident after the bankruptcy of PGC, no reclamation or water treatment bonds had been established to address conditions in that drainage.

The DEQ and U.S. Bureau of Land Management (BLM) modified mine reclamation plans to improve water quality in Swift Gulch. Despite those efforts, no improvements have been observed.

The goal of this project is to improve water quality in Swift Gulch through rehabilitation of the reach of stream previously disrupted by placer dredge mining. As part of stream reconstruction, a series of ponds would be constructed to trap sediment that forms when iron-rich groundwater enters the stream near its headwaters, becomes oxidized, and forms a precipitate. Clean-out of the upper ponds as part of routine mine site maintenance would prevent this material from migrating farther downstream and influencing water quality on the Fort Belknap Indian Reservation. Ponds constructed lower in the drainage will be designed as wetlands to further mitigate impaired water quality upstream from the reservation.

The DEQ, in cooperation with the BLM, is responsible for implementing the reclamation program at the Landusky Mine. Subsequent to closure of the bankruptcy case in June 2004, the BLM placed the mine sites under its Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority via an action memorandum. The action allows the BLM to continue to direct remedial activities at the sites despite the absence of an operator. The BLM is preparing an Engineering Evaluation/Cost Assessment (EEE/CA) addressing long-term site management options. It is anticipated that the draft EEE/CA will be published in June 2006.

The Landusky Mine is 50 miles southwest of Malta, adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Landusky Mine is in Sections 14, 15, 22, and 23, Township 25 North, Range 24 East, Phillips County. The Swift Gulch study area is in Sections 10, 11, 14, and 15 of Township 25 North, Range 24 East.

This project would take approximately 24 months.

**Technical Assessment**

The primary goal of this project is to improve water quality in Swift Gulch through regrading and rehabilitation of a section of the drainage historically disturbed by dredge mining. The rehabilitation would involve reconstruction of the stream channel, construction of a series of ponds to trap iron-rich precipitates (ferric hydroxide precipitates), construction of lower wetland ponds to "polish" the surface water in Swift Gulch, and reclamation with topsoil and reseeding of the stream terrace benches between the ponds and wetlands.

The grant application adequately defines the need for implementing a passive surface water treatment approach in Swift Gulch to help mitigate the high concentrations of dissolved iron in surface water. The iron forms precipitates in the creek channel that can be transported downstream during high flows. The water in Swift Gulch flows into South Bighorn Creek which ultimately flows onto the Fort Belknap Indian Reservation, through the Pow Wow Grounds, and along numerous recreational and camping sites within Mission Canyon. The project would restore a more natural topography to this reach of Swift Gulch and South Bighorn Creek historically impacted by placer mining.

Several alternatives were discussed in the application, such as seepage interception and treatment, grouting to redirect seepage, and additional reclamation at the Landusky Mine, but these alternatives were not presented in detail. It appears that the applicant desires to implement a remedial action with almost immediate results. The passive treatment of the surface water to remove iron and other metals by enhancing precipitation and settling is a proven method that will achieve some level of immediate benefit. Passive water treatment with constructed wetlands may or may not work for this specific surface water situation and would require completion of bench-scale and pilot-scale studies to determine its potential usefulness and design components. Ultimately, treating the source of the contaminated seepage is desirable, but implementation of settling ponds in this location will not preclude future efforts to treat the source. However, some contingency plan should be developed to reconstruct the Swift Gulch stream channel and bed, when the passive water treatment system is no longer useful or needed.

Conceptual plans for the proposed construction are general and could have been enhanced by including more details and drawings from the King Creek passive treatment wetland system. The general location of the series of seven ponds was shown, but the number of ponds proposed for iron-precipitate settling and the number proposed for wetland establishment were not stated. In addition, the overall shape and size of a pond designed for settling and routine clean-out of sediments versus a pond designed for wetland establishment should be different. Typical cross-sections and longitudinal sections could have been included for these two typical ponds. The ability of constructed wetlands to provide additional treatment of Swift Gulch water quality is unknown without some results from bench-scale and pilot-scale studies. Any wetland pond designs should attempt to establish a scrub-shrub or forested wetland ecology that contains deeper rooted woody species that will stabilize wetland soils during high flows.

The application was reviewed by the U.S. Army Corps of Engineers (USCOE). The Corps stated that the site should qualify as a CERCLA project and that the U.S. Environmental Protection Agency (EPA) is responsible for ensuring compliance with Section 404 requirements. The DEQ project manager should consult with the EPA to ensure that the 404 requirements will be met during completion of the tasks and activities.

This settling pond construction aspects of this application have merit, and only that portion of the project is recommended for funding. Successful completion of the settling ponds should provide needed improvement to water quality in Swift Gulch and to downstream surface waters. Restoration of the stream through the section of Swift Gulch impacted by historic placer mining will also provide a more natural stream channel and additional wildlife habitat.

**Financial Assessment**

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 0 | $ 7,135 | $ 7,135 |
| Fringe Benefits | $ 0 | $ 2,141 | $ 2,141 |
| Contracted Services | $ 300,000 | $ 0 | $ 300,000 |
| Travel | $ 0 | $ 2,148 | $ 2,148 |
| Miscellaneous | $ 0 | $ 2,133 | $ 2,133 |
| **Total** | **$ 300,000** | **$ 13,557** | **$ 313,557** |

The entire $300,000 grant is requested to support contracted services. The $300,000 total is broken into 14 individual items, from additional survey and staking to the purchase of sawdust, wood chips, alfalfa, and manure. The DEQ anticipates using its existing contractor for the Zortman and Landusky water treatment operations to conduct some of the required activities for this project. The DEQ acquired some dirt-moving equipment (D9 bulldozer, two backhoes, and a loader) through the default of the mine to the state. This equipment can be used for constructing the ponds and stream drainage. The project will require a dump truck during the construction phase and for the annual maintenance. Some general estimates would have been useful to evaluate the portion of the total funding that may be used for these needs.

This grant proposal contains many goals that can be achieved, and the budget should provide the necessary amount to construct the settling ponds which will help improve water quality in Swift Gulch and downstream surface waters.

**Environmental Evaluation**

Most of the adverse environmental impacts associated with this project are short-term and associated with reconstruction of the stream channel, construction of the ponds, and spreading the soil, soil amendments, and revegetation tasks. In general, the short-term adverse impacts to soils, waters, vegetation, and habitats should be offset by the long-term beneficial improvements to the stream, water quality, and restored habitats.

**Public Benefits Assessment**

This project will help mitigate current contamination in Swift Gulch and South Bighorn Creek which flow onto the Fort Belknap Indian Reservation. Areas used for recreation, camping, and the Pow Wow Grounds are approximately one mile downstream from the project area. Surface water in the recreation area may be used for swimming, fishing, drinking, or for other purposes. Construction of the settling ponds through this grant could help retain and potentially increase tourism in this area.

**Recommendation**

A grant of up to $150,000 is recommended for construction of the settling ponds contingent upon DNRC approval of the project scope of work and budget.

**Project No. 13**

| | | |
|---|---|---|
| **Applicant Name** | Broadwater Conservation District | |
| **Project Name** | Whites Gulch Reclamation–Fish Barrier | |
| **Amount Requested** | $ 24,500 | |
| **Other Funding Sources** | $ 1,500 | Applicant |
| | $ 20,000 | Montana Fish, Wildlife & Parks |
| | $ 5,000 | Montana Fish, Wildlife & Parks (Technical) |
| | $ 1,000 | Trout Unlimited |
| | $ 4,000 | Helena National Forest |
| **Total Project Cost** | $ 56,000 | |
| **Amount Recommended** | $ 24,500 | |

**Project Abstract** (Prepared and submitted by applicant)

In 1995, the Broadwater Conservation District, in cooperation with Trout Unlimited, Montana Department of Fish, Wildlife & Parks (DFWP), and the Helena National Forest (HNF), conducted a placer mine reclamation project in Whites Gulch in the Big Belt Mountains utilizing funds from the Reclamation and Development Grants Program (RDGP). The project included reclamation of nearly 3,000 feet of stream and reshaping of almost 17 acres of placer-mined floodplain. A portion of the project also included installation of a fish barrier, as prereclamation site conditions had isolated a small population of pure- strain native westslope cutthroat trout (WCT) in an old diversion ditch. While the ditch separated the sparse population from non-native brook trout, it also was unstable and actively eroding before the reclamation effort. Since 1995, the reclamation project area has provided suitable habitat and the WCT population is thriving. The Whites Gulch population is doing well enough that surplus fish will be used to establish new populations of westslope cutthroat trout in the Upper Missouri River Basin in 2006.

Annual monitoring and maintenance of the project area and fish populations identified in 2005 suggested that a second fish barrier should be installed for several reasons:

- Existing barrier is aging and high flows could damage the structure;
- Location of barrier adjacent to road has invited inadvertent use by the public which is contributing to loss of function; and
- Structural damage would compromise 12 years of maintenance to retain separation of fish populations.

Project Goal: Ensure continued success of the Whites Gulch Reclamation Project which includes separation of native and non-native fish populations through constructed barriers.

Objective 1: Barrier should be cost-effective, durable, and low-maintenance.
Objective 2: Barrier should be less visible to the public to prevent inadvertent damage.

Responsible Organizations: Broadwater Conservation District, DFWP, and HNF.

Location: Whites Gulch drainage in the Big Belt Mountains, about 23 miles northeast of Townsend, on U.S. Forest Service lands, in T10N, R2E, Section 16 (SW1/4).

Duration: Three weeks.

**Technical Assessment**

As part of a placer mine reclamation project completed in Whites Gulch in 1995 by the Broadwater Conservation District in cooperation with Trout Unlimited, DFWP, and the HNF, a fish barrier was constructed to isolate a small population of pure-strain westslope cutthroat trout (WCT) from a downstream population of non-native brook trout. This barrier was successful and has

resulted in an increase in the WCT population from approximately 100 to more than 1,000. In fact, the DFWP is planning to take surplus fish from this WCT population to establish new populations of WCT in the Upper Missouri River Basin in 2006.

Unfortunately, the location of the fish barrier adjacent to a public road has resulted in inadvertent use of the barrier by the public, which has in turn decreased ability of the barrier to continue to separate the two fish populations. In addition, annual monitoring of the barrier by USFS personnel has indicated that the structure is showing signs of wear and may be vulnerable to damage during high streamflows.

To ensure the continuing success of the fish barrier program and to reduce potential future damage to the fish barrier, the applicant is proposing construction of a second fish barrier upstream from the existing barrier in a less accessible location. The proposed second barrier will be designed by USFS and DFWP personnel and reviewed by a professional engineer. The anticipated barrier design will be similar to that of the first barrier, which over time and at several locations has proven to be an effective method of separating fish populations.

The proposed tasks required to complete the project appear reasonable and achievable, although the involvement of multiple partners will require continuing coordination to assure the proposed schedule is maintained. Fortunately, the project partners have a long and successful history of working together at this site and there is no reason to assume they cannot continue to do so.

**Financial Assessment**

The budget appears adequate for the proposed project and represents an adequate mix of grant and matching funds. Estimated construction costs were based not only on the cost of the original barrier but also on a recently constructed barrier on Muskrat Creek in the Elkhorn Mountains. The only questionable aspect of the budget is the failure to identify salary-related fringe benefits as a budget item.

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 1,500 | $ 10,500 | $ 12,000 |
| Contracted Services | $ 23,000 | $ 21,000 | $ 44,000 |
| **Total** | **$ 24,500** | **$ 31,500** | **$ 56,000** |

**Environmental Evaluation**

As is common for any project involving construction, especially construction involving a streambed, short-term negative environmental impacts will occur, including sedimentation, turbidity, dust, and noise. However, state-mandated permits will require these impacts to be mitigated to the extent feasible.

The long-term environmental impact of the project is positive: The proposed fish barrier will not only continue to protect a vulnerable population of WCT from non-native brook trout but also provide a stable source for potential re-establishment of other WCT populations. This could help prevent potential listing of the WCT as a threatened or endangered species in Montana. If this should occur, significant implications could result for Montanans living and working not only in Broadwater County but throughout the state.

**Public Benefits Assessment**

WCT is the state fish of Montana. For that reason alone, some would say it is important to maintain viable WCT populations in those few locations still suitable for propagation. Other public benefits include maintaining the benefits achieved during the 1995 placer mining reclamation projects, avoiding potential negative impacts to local farmers and ranchers should the WCT be listed, and providing a more durable and protected fish barrier.

**Recommendation**

A grant of up to $24,500 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 14**

| | | |
|---|---|---|
| **Applicant Name** | Montana Department of Environmental Quality (DEQ) | |
| **Project Name** | Landusky Mine–Characterization of Surface Water/Groundwater Interactions in Swift Gulch and the Adjacent Landusky Pit Complex | |
| **Amount Requested** | $ 300,000 | |
| **Other Funding Source** | $ 30,198 | Applicant |
| **Total Project Cost** | $ 330,198 | |
| Amount Recommended | $ 300,000 | |

**Project Abstract** (Prepared and submitted by applicant)

Pegasus Gold Corporation (PGC) conducted open pit mining at the Landusky Mine between 1979 and 1996. PGC declared bankruptcy in 1998, and the DEQ now operates water treatment systems at the site, using funds from short-term water treatment bonds. Significant deterioration of water quality in Swift Gulch was first noted in 1999. Because impaired water quality in Swift Gulch became evident after the bankruptcy of PGC, no reclamation or water treatment bonds had been established to address conditions in that drainage.

The DEQ and the U.S. Bureau of Land Management (BLM) modified mine reclamation plans to improve water quality in Swift Gulch. Despite those efforts, no improvements have been observed. Additional studies are needed to better characterize groundwater flow systems adjacent to Swift Gulch to determine the best course for further remedial actions.

The goal of this project is to improve water quality in Swift Gulch. The objective is to characterize groundwater flow in the vicinity of Swift Gulch and the adjacent Landusky pit complex so that the relative effectiveness of various remedial options can be accurately assessed and appropriate actions can then be implemented.

The DEQ, in cooperation with the BLM, is responsible for implementing the reclamation program at the Landusky Mine. Subsequent to closure of the bankruptcy case in June 2004, the BLM placed the mine sites under its Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority via an action memorandum. The action allows the BLM to continue to direct remedial activities at the sites despite the absence of an operator. The BLM is preparing an Engineering Evaluation/Cost Assessment (EEE/CA) addressing long-term site management options. It is anticipated that the draft EEE/CA will be published in June 2006.

The Landusky Mine is 50 miles southwest of Malta, adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Landusky Mine is in Sections 14, 15, 22, and 23, Township 25 North, Range 24 East, Phillips County. The Swift Gulch study area is in Sections 10, 11, 14, and 15 of Township 25 North, Range 24 East.

This project would take approximately 24 months.

**Technical Assessment**

This project requests funding to study the hydrogeologic system in Swift Gulch, which is adjacent to the Landusky Mine. Failure of previously implemented environmental controls and the potential for widespread groundwater and surface water contamination provide the need for this project. Contaminants from the mine site are entering Swift Gulch and degrading water quality, but the exact source of the contaminants and route of entry are unknown.

The applicant adequately documented the problem history and previous investigations. The applicant stated great need and urgency for supporting the project, as contamination is steadily moving downstream toward the Fort Belknap Indian Reservation and important Tribal ceremonial grounds. However, supporting documents and sample results clarifying the impacts and exceedances of human health and aquatic life standards were not included with

the application. The applicant also stated that a better understanding of the hydrogeologic system in Swift Gulch is necessary so appropriate remedial alternatives can be assessed and implemented.

The cost-benefit analysis lacked detail in comparing the cost of the project relative to its potential benefits. In addition to the preferred alternative, the applicant evaluated the following two alternatives for this project:

- No action alternative; and
- Implementation of remedial actions.

The recently completed EEE/CA for the Landusky Mine site evaluated remedial alternatives in Swift Gulch, and this characterization project was not selected as the preferred alternative. Instead remedial action involving settling ponds and wetlands treatment was selected, and a separate RDGP grant has been submitted for that project. The alternatives analysis of this grant states that implementation of remedial actions without characterization could lead to improper selection of technologies that don't meet remediation goals.

The goals/objectives outlined in the application were clearly stated and adequate for this project. Task descriptions provided enough detail to properly evaluate the application; however, the project schedule lacked detail and provided only start and finish dates. Proposed well locations and completion details were not provided, but the project approach will likely achieve the desired goals if implanted properly. The deliverable for this project is a report outlining study results. The administration and staff for the project have adequate experience to carry out the project.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salary and Wages | $ 0 | $ 14,764 | $ 14,764 |
| Fringe Benefits | $ 0 | $ 4,429 | $ 4,429 |
| Contracted Services | $ 300,000 | $ 0 | $ 300,000 |
| Travel | $ 0 | $ 6,591 | $ 6,591 |
| Miscellaneous | $ 0 | $ 4,414 | $ 4,414 |
| **Total** | **$ 300,000** | **$ 30,198** | **$ 330,198** |

The grant funds will be used to characterize the interaction between groundwater and surface water, which will lead to a better understanding of groundwater flow patterns in the area. Future remediation of the Landusky Mine and Swift Gulch will be based on the findings of this study. The matching funds provided by DEQ include salaries, benefits, indirect costs, and travel expenses for current DEQ employees. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. Specific costs for other alternatives were not provided; however, past remediation projects have cost more than five times the amount of this project and have not produced favorable results.

The project will result in positive benefits for area farmers, ranchers, and residents, provided that the appropriate remedy is implemented.

**Environmental Evaluation**

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Beneficial results are primarily related to the collection of groundwater and surface water interaction data for use in developing more efficient environmental remediation strategies for the Landusky Mine site. Minimal short-term, construction-related impacts will be controlled through permitting, landowner access permission, and proper construction methodology.

**Public Benefits Assessment**

The proposed project has the potential to directly and indirectly benefit Montanans. Direct benefits will be realized by landowners and residents in the immediate area of the mine. Also, data gathered as part of this project will lead to better remedy selection at the mine, and will indirectly benefit a wider group of citizens who use and recreate in the Swift Gulch, King Creek, and Bighorn Creek drainages. Details on the indirect benefits of this project were difficult to determine. This project will lead to preservation of water quality and aquatic habitat in Swift Gulch.

**Funding Recommendation**

A grant of up to $300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 15**

| | | |
|---|---|---|
| **Applicant Name** | Big Horn Conservation District (BHCD) | |
| **Project Name** | Montana Regional Coalbed Methane (CBM) | |
| **Amount Requested** | $ 157,659 | |
| **Other Funding Sources** | $ 3,613 | Applicant |
| | $ 80,544 | MBMG |
| **Total Project Cost** | $ 241,816 | |
| **Amount Recommended** | $ 160,000 | |

**Project Abstract** (Prepared and submitted by applicant)

CBM is a new and growing industry, providing jobs and economic growth in southeastern Montana. In the Powder River Basin (PRB) in southeastern Montana, a regional groundwater monitoring program has been developed to address concerns over potential groundwater changes that may occur from CBM production. The monitoring program is supported by county conservation districts, U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), and Montana Bureau of Mines and Geology (MBMG). The monitoring program documents baseline groundwater conditions, changes due to CBM water production, recovery of aquifers following development, and provides actual data to support decisions and, if needed, to dispel rumors. Scientific data and interpretations for decision makers, in support of the CBM Protection Act and the environmental impact statement (EIS), require monitoring data including water levels and water quality in wells and spring flow rates.

The goals of this project are to:

- Provide groundwater data in support of CBM development decisions; and
- Actively involve landowners in data collection for their private wells and springs.

Data collected will be publicly available through the Ground-Water Information Center (GWIC). Monitoring by landowners will greatly expand the network to include private wells and springs and will directly support the CBM Protection Act (HB 572, 2001 Legislature).

The project will be administered by the BHCD, with technical services provided by the MBMG. Landowner workshops will be coordinated by the BHCD.

The project area includes roughly that portion of the PRB where CBM is most likely to be developed in Big Horn, Rosebud, Powder, Custer, and Treasure counties. Monitoring is focused in those areas and along the groundwater flow direction.

The anticipated life for the project is 24 months, beginning July 1, 2007.

**Technical Assessment**

This project requests funding to continue and augment current water quality monitoring and data collection of approximately 4,000 square miles of CBM-producing area in southeastern Montana within the PRB. The data would be used to support HB 572, the Coalbed Methane Protection Act. The MBMG currently monitors 226 wells, 28 springs, and three meteorological stations in this CBM-producing region of Montana.

The applicant adequately documented the problem history and previous investigations. Due to the onset of CBM development in the PRB, baseline data is needed to document impacts to groundwater and surface water. Supporting documents, such as reports, letters of support, or public meeting minutes, were not provided with the application. The cost-benefit analysis lacked detail comparing cost of the project relative to its potential benefits. Study results would be used by landowners, mineral rights holders, and regulators to make sound decisions regarding CBM development.

The applicant listed the following three possible alternatives to the project:

- Do not fund CBM monitoring for the PRB;
- Fund this or a similar project later; and
- Find an alternative funding source for this project.

Given these alternatives, the applicant demonstrated adequate need and urgency for supporting the project at this time. The administration and staff for the project have more than adequate experience to carry out the project.

The goals/objectives outlined in the application were adequate for the project. Most task descriptions provided enough detail to properly evaluate the application. The deliverables for this project are annual reports produced by MGMB and publishing of data on the GWIC website. The project schedule lacks detail, including number of samples, analysis parameters, location of monitoring network in relation to developed/undeveloped areas, and landowner data collection. A more detailed schedule could be provided before awarding funding. Although data collection by landowners is useful in engaging and educating them about CBM issues, care should be taken in the use of data collected by nonprofessional personnel, and periodic data quality checks should be conducted.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 58,387 | $ 24,273 | $ 82,660 |
| Fringe Benefits | $ 20,404 | $ 8,846 | $ 29,250 |
| Contracted Services | $ 4,000 | $ 0 | $ 4,000 |
| Supplies and Materials | $ 1,800 | $ 0 | $ 1,800 |
| Communications | $ 550 | $ 0 | $ 550 |
| Travel | $ 17,940 | $ 0 | $ 17,940 |
| Rent | $ 5,750 | $ 0 | $ 5,750 |
| Equipment | $ 38,262 | $ 0 | $ 38,262 |
| Miscellaneous | $ 10,566 | $ 51,038* | $ 61,604 |
| **Total** | **$ 157,659** | **$ 84,157** | **$ 241,816** |

* (Includes $47,425 of MBMG Indirect Costs)

Grant funds will be used to monitor wells in CBM production areas within the PRB, update databases, and prepare groundwater models predicting effects of CBM production. Matching funds provided by MBMG include federal funds that have been approved but not contracted, as of the application due date. The budget appears reasonable to fund the project, but it appears that some program costs may be included. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. Since no other alternatives were evaluated, a cost comparison between different alternatives could not be performed.

**Environmental Evaluation**

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Beneficial results are primarily related to collection of significant groundwater data for use in annual reports published and provided to stakeholders, and developing a groundwater model available to regulatory agencies and the general public for use in future decision making. Minimal short-term, construction-related impacts (from installation of the monitoring equipment) will be controlled through permitting, landowner access permission, and proper construction methodology.

**Public Benefits Assessment**

The proposed project will affect approximately 4,000 square miles in southeastern Montana. The project will provide positive impacts for area farmers, ranchers, and residents. Benefits to area landowners and mineral rights holders could be significant, depending on CBM production growth in southeastern Montana. The data collected in this study would be used to document adverse environmental impacts resulting from CBM production by providing baseline data and models to allow better management of CBM production and development. With proper management, planning, and communication between stakeholders, CBM production in the region could produce needed jobs and economic growth, at the same time avoiding significant impacts to the water system in the PRB.

**Funding Recommendation**

A grant of up to $160,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

**Project No. 16**

| | | |
|---|---|---|
| **Applicant Name** | Gallatin Local Water Quality District (GLWQD) | |
| Project Name | Assessment and Distribution of Pharmaceuticals and Endocrine Disruptors in Wastewater, Groundwater, and Surface Waters of the Gallatin Valley | |
| **Amount Requested** | $ 293,765 | |
| **Other Funding Sources** | $ 40,582 | Applicant |
| | $ 92,594 | MBMG |
| **Total Project Cost** | $ 426,941 | |
| **Amount Recommended** | $ 294,000 | |

**Project Abstract** (Prepared and submitted by applicant)

Pharmaceuticals, personal care products, and endocrine-disrupting chemicals (PPCPs), released to the environment from human and/or animal waste, cause adverse health effects in humans and wildlife. Recently, these compounds have been reported in the streams and groundwater of Montana. However, not enough information exists on the occurrence or fate and transport of these biologically active chemicals to assess or develop strategies to avoid future problems. Information available suggests some waste treatment approaches are much more effective at PPCP removal than others. Recognizing and implementing the best waste treatment approaches is critically important to maintaining safe water supplies for humans and wildlife in Montana. The need in areas undergoing rapid growth, such as the Gallatin Valley, is especially urgent. This project will assess the occurrence of PPCP in the waters of Gallatin County, determine the efficiency of various wastewater treatment approaches, and make recommendations for reducing PPCP loading to state waters.

Project goals are:

- Document and quantify the ability of different wastewater treatment systems used in the Gallatin Valley to remove PPCPs and quantify the loading of PPCPs to surface or groundwater from treated effluent;
- Determine extent and magnitude of PPCP contamination in surface and groundwater in the Gallatin Valley; and
- Recommend options for reducing PPCP contamination of state waters.

Management responsibility will be shared between the GLWQD and Montana Bureau of Mines and Geology (MBMG), with primary responsibility resting with the district. The project area will include surface and groundwater sampling sites selected for susceptibility to pharmaceuticals contamination, as well as samples of influent and effluent from individual, community, and municipal wastewater treatment facilities within Gallatin County. Project duration is July 1, 2007 through June 30, 2009.

**Technical Assessment**

This project requests funding to study the distribution of PPCPs found in Gallatin County wastewater, groundwater, and surface water. The potential adverse health effects of these contaminants, coupled with the rapid population growth in Gallatin County, drive the need for this project. These contaminants are believed to enter surface water and groundwater through municipal sewage treatment plants, community wastewater systems, and individual septic systems. The actual concentration of PPCPs in the Gallatin Valley and the potential adverse health effects are unknown; however, studies conducted in other Montana urban valleys have shown widespread presence of PPCPs.

The applicant adequately documented the problem history and referenced previous investigations. However, supporting documents such as reports, letters, or public meeting minutes were not provided with the application. The cost-benefit analysis lacked detail comparing the cost of the project relative to its potential benefits.

In addition to the preferred alternative, the applicant evaluated the following three alternatives for this project:

- No action alternative;
- Evaluation of PPCP contamination in groundwater only; and
- Evaluation of PPCP contamination in surface water only.

The applicant demonstrated adequate need for supporting the project; however, the urgency and critical need to complete this project was not demonstrated. PPCPs are an emerging issue across the country, but much is unknown and regulation is not currently required. The levels at which adverse health impacts occur were not documented. Supporting documents which may have better demonstrated the need and urgency did not accompany the application. The administration and staff for the project have adequate experience to carry out the project.

The goals/objectives outlined in the application were clearly stated and adequate for this project. Task descriptions provided detail to properly evaluate the application, but specific monitoring details and locations were not identified. PPCP analytical costs are very expensive due to the low level concentrations at which they exist. Although detailed analytical data is needed to determine wastewater system removal efficiencies, the widespread presence of PPCPs documented in recent Montana studies (Missoula Valley, Helena Valley) suggest the likely presence of PPCPs in the Gallatin Valley as well. More time could be spent identifying wastewater types and locations throughout the valley and potential community wastewater opportunities, instead of funding extensive analytical sampling. The deliverables for this project are a final report outlining removal efficiencies of various wastewater treatment systems, the determination of the extent and magnitude of PPCPs found in Gallatin County groundwater and surface water, and recommendations to control and remove PPCPs from wastewater. The project schedule is detailed and realistic based on previous experience.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salary and Wages | $ 71,186 | $ 45,150 | $ 116,336 |
| Fringe Benefits | $ 22,423 | $ 9,824 | $ 32,247 |
| Contracted Services | $ 186,000 | $ 975 | $ 186,975 |
| Supplies and Materials | $ 3,500 | $ 0 | $ 3,500 |
| Travel | $ 10,656 | $ 729 | $ 11,385 |
| Rent | $ 0 | $ 2,700 | $ 2,700 |
| Equipment | $ 0 | $ 15,000 | $ 15,000 |
| Miscellaneous | $ 0 | $ 58,798* | $ 58,798 |
| **Total** | **$ 293,765** | **$ 133,176** | **$ 426,941** |

* (Includes $39,298 MBMG Indirect Costs)

Grant funds will be used to generate a report that outlines the extent and concentrations of PPCPs found in Gallatin County groundwater and surface water, and the ability of different treatment systems to remove PPCPs from water. The information in the report will be based on data collected from sampling locations throughout Gallatin County. The matching funds provided by the applicant include state and federal funds that have not been contracted as of the application due date. The budget appears reasonable to fund the project; however, PPCP analytical costs are very high, with $186,000 of the $293,765 RDGP fund request (63%) dedicated to analytical work. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. Costs for other alternatives were not included; as a result, it was not possible to determine if this alternative is the most cost-effective.

The actual magnitude and extent of PPCP contamination in Montana and the Gallatin Valley is unknown. Previous studies in the Missoula and Helena valleys have shown widespread presence of PPCPs. This project would help

define a major valley with rapid growth, and thus could provide valuable information for other developed areas throughout Montana.

**Environmental Evaluation**

Environmental impacts associated with this project were evaluated. No apparent adverse long-term impacts to the physical environment will result. Potential impacts to the human environment are more difficult to evaluate because of unknown concentrations resulting in health impacts and lack of regulatory limits. A potential exists for beneficial impacts to human health and safety, fisheries, wildlife, and recreation. Impacts to population quantity and distribution; housing quantity and distribution; employment quantity and distribution; industrial, commercial, and agricultural activities; and environmental plans and goals may be either adverse or beneficial depending on study results. Minimal short-term impacts will be controlled through permitting, landowner access permission, and proper sampling methodology.

**Public Benefits Assessment**

The proposed project has the potential to directly and indirectly benefit Montanans. However, because the scope of the potential problems associated with PPCP contamination is not yet defined at a federal or state level, the number of citizens affected and level of benefit cannot be determined. Both human and aquatic ecosystems are likely to benfit, and the study will provide information to help protect groundwater and surface water systems from further PPCP impacts.

**Funding Recommendation**

A grant of up to $294,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

## Part 2. Projects Not Recommended for Funding

| | | |
|---|---|---|
| **Applicant Name** | Geraldine, Town of | |
| **Project Name** | Moonlight Meadow Test Hole Abandonment | |
| **Amount Requested** | $ 265,000 | |
| **Other Funding Source** | $ 0 | Applicant |
| Total Project Cost | $ 265,000 | |
| **Amount Recommended** | $ 0 | |

**Project Abstract** (Prepared and submitted by applicant)

The town of Geraldine is applying for this grant seeking funds to plug and abandon the well known as the Moonlight Meadow Well damaged on or around May 11, 2004. Evidence exists that at least three separate aquifers were opened up and have been mixing since. At least 70 feet of drill stem, drill bit, and drill collar lost and/or lodged in the borehole has proven unrecoverable by the driller.

The town's goal for this project is to attempt to mitigate the continuing damage to state waters. It is only a matter of time before this water starts showing up in surrounding wells. The town of Geraldine is probably first in line because of the proximity of its municipal wells. A number of stock water wells in the vicinity could be affected by the toxic levels of iron present in one of the aquifers. Since the well has unrecoverable or lost drilling tools lodged in it, no other alternative exists but plugging and abandoning it, per the Montana Code Annotated (MCA). The intention of the project is to seal off the intermingling of the aquifers and plug the damaged hole using the most economical method.

The town of Geraldine will be in charge of the project.

The legal description of the site is SE 1/4 of Section 31 Township 21N Range 12E, the SE1/4 of SE 1/4 in Chouteau County. The damaged well sits southwest of Geraldine, tucked in a valley east of what is commonly known as Coffin Butte. The town's engineer estimates the project will take a month to complete.

**Technical Assessment**

This project requests funding to plug and abandon a damaged test well near Geraldine. The goal of the well was to provide municipal water for Geraldine, but due to drilling problems (including the contractor losing a section of drill stem collar and a drill bit in the well, and borehole erosion), the well was not completed and needs permanent closure. The well is over 2,500 feet deep and has over 420 feet of hydraulic head at the collar. The high pressure and flow in the uncased well has caused erosion of the borehole and presents the potential for several aquifers of varying quality to mix, thus potentially degrading water quality in nearby shallow aquifers.

The applicant adequately documented the problem history and previous investigations. Letters of support and other documents such as reports, environmental assessments, and management plans were provided with the application. The cost-benefit analysis lacked detail comparing the cost of the project relative to its potential benefits. The applicant presented imminent need and urgency for supporting the project.

The applicant presented imminent need and urgency for supporting the project. However, the potential of the borehole contaminating the existing town's water supply is low, due to recent completion of another well which was properly constructed approximately three miles away. Surrounding stock water wells are located approximately two miles from the borehole, but have only a moderate potential for contamination.

In addition to the preferred alternative of well abandonment, the applicant evaluated the following two alternatives for this project:

- No action alternative; and
- Complete the well installation

The preferred alternative is to properly abandon the test well and prevent future impact on surrounding groundwater sources. The proposed abandonment will occur by setting a well packer at the bottom of the well casing (approximately 1,390 feet), and pressure-injecting grout to seal the 2,500-foot borehole. The borehole has been open since 2004, when the original driller stopped work on the project after losing a tool string down the borehole. Significant drilling difficulty was encountered due to borehole erosion. As a result, impacts of the lost tool string or continued borehole erosion are unknown. The proposed method of pressure-injecting grout from the bottom of the casing will not ensure that the three aquifers will be properly sealed from cross-contamination, since these aquifers are several hundred feet deeper than the bottom of the casing. It may be necessary to advance tooling down to the top of the Madison Formation (approximately 1,910 feet), at a minimum, to ensure proper abandonment. It will be impossible to determine what steps are necessary without first determining the current borehole conditions: location of well tooling, degree of borehole erosion, and pressure. High well pressures and borehole unknowns make working conditions unpredictable and potentially dangerous.

The project schedule was detailed and appears reasonable. The administration and staff proposed for the project have adequate ability to administer the project; however, it is recommended that an outside well expert be consulted before abandonment activities begin. A current legal action between the town and the former driller may also hamper the project.

**Financial Assessment**

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Contracted Services | $ 260,000 | $ 0 | $ 260,000 |
| Miscellaneous | $ 5,000 | $ 0 | $ 5,000 |
| **Total** | **$ 265,000** | **$ 0** | **$ 265,000** |

Grant funds will be used for costs associated with abandoning the failed installation of a deep water well. The budget section of the application did not include the tables required in the application. Cost sheets supplied by a consulting company were provided in place of the budget forms required in the application. Two thousand six hundred dollars in matching funds were noted on Page 2 of the application, but this match was not included in the budget section, and therefore was not included in the budget evaluation. Cost estimates provided by the consulting company for construction oversight, mobilization, and drilling appear high, and a range of costs for both the engineering and drilling tasks were provided due to unknown conditions in the borehole. A specific abandonment process was not identified in the technical assessment, and the proposed process may not be adequate. The maximum cost of each task range was requested in the application. These costs appear high for a well abandonment, and a contingency is already built into the project estimate. Since no other alternatives were evaluated, a cost comparison between the various alternatives could not be performed.

The applicant did not provide the exact size of the affected area and the number of Montanans affected by this project. Project completion will result in conservation of multiple potential drinking water aquifers for residents of Geraldine and the surrounding area.

**Environmental Evaluation**

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Long-term beneficial effects are likely upon closure of the well. Minimal short-term, construction-related impacts will be controlled through permitting, landowner access permission, and proper construction methodology.

**Public Benefits Assessment**

The proposed project has the potential to directly and indirectly benefit Montanans. Because the scope of the current project is limited to the area surrounding the Moonlight Meadow Well, only those Montanans in the immediate area will directly benefit from this project. Indirect benefits will likely expand from the project area due to preservation of a major drinking water aquifer in the region (Madison Formation), but the applicant did not provide details on actual numbers of people who will benefit or potential area affected. The data gathered as part of this project will indirectly benefit a wider group of citizens through protection of drinking water aquifers in the area. This project will conserve natural resources, but will not create jobs for Montanans.

**Funding Recommendation**

No funding is recommended for this project.

| | | | |
|---|---|---|---|
| **Applicant Name** | Montana Tech of The University of Montana, Department of Biological Sciences | | |
| **Project Name** | Butte Native Plant Propagation Nursery | | |
| **Amount Requested** | $ | 289,922 | |
| **Other Funding Sources** | $ | 112,060 | Applicant |
| | $ | 16,097 | Butte-Silver Bow |
| | $ | 10,000 | Rocky Mountain Laboratory |
| **Total Project Cost** | $ | 428,079 | |
| **Amount Recommended** | $ | 0 | |

**Project Abstract** (Prepared and submitted by applicant)

Butte's natural ecosystem has been negatively impacted from 130 years of mining and smelting. Five-hundred individual waste rock and tailings dumps occur where a native subalpine vegetation community once flourished. Many dumps were reclaimed with revegetated soil caps of grasses and alfalfa providing temporary soil stability. The native flora of the Butte Hill and much of Summit Valley is represented by small remnant patches which produce an insufficient seed source to propagate and expand into the rest of the landscape which is thinly vegetated with weedy species.

The goal of this project is to provide plants to re-establish native species diversity into open spaces of Butte to produce a sustainable and aesthetically pleasing ecosystem. The goal will be accomplished by constructing a greenhouse nursery and hardening facility to propagate native plant material collected on Butte Hill in Summit Valley. Previously identified plant species (identified in a pilot project conducted by Butte-Silver Bow [BSB] Planning Department, and a project conducted by K. Douglass and volunteers from the Native Plant Society) will be used. The variety of plant species will continue to increase through collection of local native plant species.

The Department of Biological Sciences of Montana Tech of The University of Montana will be responsible for and supervise construction of the facility and the project. Faculty, staff, and students will manage the greenhouse, collect native plant seeds and vegetative material for propagation, conduct experimental propagation techniques, prepare the plants for distribution and planting, and monitor success of the plantings in the field. BSB staff will participate in propagation of plant material.

The facility will be at Montana Tech. The plants produced will be available for planting on the Butte Hill and surrounding Summit Valley.

The project will take approximately 12 months to complete.

**Technical Assessment**

The primary goal of this project has been slightly modified from the one submitted previously. The current goal is to provide plants to re-establish native species diversity in Butte open spaces. The previous goal was to improve revegetation of reclaimed Butte open spaces. Although the change to the goal is minimal, the ability to meet this revised goal is more attainable.

The application does not adequately define the methods for (1) providing plants, and (2) re-establishing native species diversity in Butte open spaces. Seed from native plants has been collected for the last few years, but how that seed has been stored or propagated was not discussed. Previous reclamation efforts by state agencies and by Anaconda Mining Company (Anaconda) and Atlantic Richfield Company (ARCO) to establish successful revegetation (including native species) was not discussed in detail or adequately referenced. Anaconda revegetation test plots were established in the late 1970s. Other field and greenhouse efforts by the Montana State University (MSU) Reclamation Research Unit, Bridger Plant Material Center, ARCO, and the U.S. Environmental Protection Agency (EPA) completed in the 1980s and 1990s have expanded on the goal of re-establishing native and site-

adapted vegetation in the Butte area. A more in-depth discussion of the successes and failures of these previous reclamation and research efforts would have added credibility to statements that the existing revegetated caps are not sustainable natural plant communities. The application could have referenced other revegetation monitoring reports in addition to the two Prodgers reports (1995 and 1998).

The current goal is attainable because interseeding with propagated plants that already have established root systems is a proven method for successfully increasing plant diversity in areas revegetated with predominantly grasses and legumes. However, interseeding with shrubs and trees is not typically used to promote the stability of earthen soil caps placed on top of reclaimed mine waste rock dumps. Long-term soil stability and reduced soil erosion from soil caps is usually achieved with a seed mixture that contains a combination of sod-forming and bunch type grasses, forbs, and legumes (or other native nitrogen-fixing plants). Many revegetation methods have been used to provide the revegetation species with the rooting depth, water-holding capacity, and plant nutrients necessary for a self-perpetuating revegetated plant community. Ultimately, the most desirable vegetative cover for reclaimed areas should provide protection to the surface soil while also having diversity and a native and natural look. The application did not discuss if the existing revegetated areas are failing, why they are not sustainable plant communities, if there is increased soil erosion compared to native areas, or if soil erosion gullies or mass wasting problems have exposed the underlying waste rock.

The potential and likely invasion of weedy plant species was mentioned but not documented with actual monitoring efforts. It was unclear how the Butte open spaces will be utilized by multiple land use activities. In addition, the proposal assumes that local adapted plants would help improve diversity; many other factors could be involved, including the original revegetation techniques, site-specific soil conditions, control or lack of control of invasive weeds in surrounding areas, and natural plant succession.

The application's stated purpose and goal is to improve revegetation diversity in Butte, but its actual purpose and goal appears to be to construct a new greenhouse at Montana Tech. A new greenhouse and plant-hardening facility at Montana Tech may be a worthwhile and needed project, but should stand on its own merits rather than concealed within a proposed revegetation diversity project. The cost for demolition, site preparation, and the greenhouse equates to about 80 percent of the total requested funding and is thus the primary part of this application.

**Financial Assessment**

| | RDGP | Matching Funds | Total |
|---|---|---|---|
| Salaries and Wages | $ 29,160 | $ 13,610 | $ 42,770 |
| Fringe Benefits | $ 9,612 | $ 2,487 | $ 12,099 |
| Contracted Services | $ 76,150 | $ 0 | $ 76,150 |
| Supplies and Materials | $ 0 | $ 3,000 | $ 3,000 |
| Travel | $ 0 | $ 4,000 | $ 4,000 |
| Equipment | $ 175,000 | $ 10,000 | $ 185,000 |
| Miscellaneous | $ 0 | $ 105,060 | $ 105,060 |
| **Total** | **$ 289,922** | **$ 138,157** | **$ 428,079** |

The costs to demolish the old greenhouse, prepare the new greenhouse site, and purchase and construct a new greenhouse account for approximately $250,000 of the $290,000 requested funding. The general cost of $110 per square foot of greenhouse space was used, but was not documented. At $110 per square foot, a 1,800-square-foot greenhouse would cost $198,000, slightly more than the $175,000 budgeted for the greenhouse facility. The costs of metal and construction labor have fluctuated widely over the last 12 months which could cause the greenhouse to cost more than anticipated in the application.

**Environmental Evaluation**

No long-term adverse environmental impacts are associated with this project. Demolition and construction of the greenhouse could create potential short-term exposure to dust and other environmental pollutants. In addition, the existing greenhouse piping, vents, and structural components should be inspected for potential asbestos before demolition.

**Public Benefits Assessment**

This project appears to have the support of the Butte community and has included assistance from the BSB Planning Department. The primary public benefit would be increased aesthetics in reclaimed Butte open spaces. The public may also benefit from the opportunity to observe additional wildlife; areas currently vegetated grasslands could have additional microhabitats and perching sites for birds provided by woody shrubs and trees.

**Recommendation**

No funding is recommended for this project.

# CHAPTER III

# STATUS REPORT OF 1999 - 2005 PROJECTS

This chapter briefly summarizes the status (as of October 30, 2006) of active projects and projects completed since preparation of the January 2005 Legislative Report. Projects are grouped according to the year in which they received legislative approval; within each grouping, projects are presented in the order of their relative funding priority.

**Projects Approved by the 2005 Legislature**

**1. Montana Board of Oil and Gas Conservation / 2005 Eastern District Well Plug and Abandonment, and Site Restoration**

This project proposes to plug 27 oil and gas wells in Dawson, McCone, Phillips, Richland, and Valley counties. The grant contract has been executed, and work will begin soon depending on weather and drill rig availability.

**2. Montana Board of Oil and Gas Conservation / 2005 Northern District Well Plug and Abandonment, and Site Restoration**

This project proposes to plug 20 oil and gas wells in Toole and Glacier counties. The grant contract has been executed, and work will begin soon depending on weather and drill rig availability.

**3. Montana Department of Environmental Quality / Bluebird Mine Reclamation Project**

Work on the Bluebird Mine Reclamation Project was awarded to a trucking and excavation company as part of a larger mine waste management contract. Mining waste from three abandoned mine projects in Jefferson and Powell counties is to be transported to the Basin Creek Mine and encapsulated as part of the Leach Pad 1 reclamation at that site. Work on the Bluebird Mine portion of this larger project started on July 17, 2006 with excavation and hauling of mine waste material from the Bluebird to Basin Creek Mine. Work on the entire project is expected to be completed by November 2006.

**4. Montana Department of Environmental Quality / Frohner Mine Reclamation Project**

The Frohner Mine Reclamation project has been put on hold while DEQ continues attempts to work with the U.S. Forest Service (USFS) to clean up this site in Jefferson County. The Frohner Mine is a very old mining property, and most of the claims were patented under the 1866 Mining Law (as opposed to the 1872 Mining Law). The practical difference between the two laws is that the claims patented under the 1866 Mining Law are only 150 feet wide; with such narrow private property parcels, no areas of land are suitable for development of a mining waste repository. While most of the mining disturbance at the Frohner project is on private property, the mining waste overlaps onto national forest lands in some areas. The USFS does not have funding to allow it to work with DEQ on this project and thereby provide an opportunity to construct a mine waste repository on the Forest Service property. This property would take the waste from both private mining claims and from Forest Service lands. For this to occur, the Forest Service would need to apply for and receive funding under the federal FY 2008 (or later) budget. DEQ continues to discuss this option with the USFS.

**5. Montana Department of Environmental Quality / Buckeye Mine Reclamation Project**

Work on the Buckeye Mine Reclamation Project, in Madison County, was awarded to a trucking and excavation company on September 14, 2006. The contractor was issued a notice to proceed on October 16, 2006 for a 45-day construction period. Work on this project is anticipated to be completed by December 2006, with a time extension possible depending on weather delays.

**6. Lewistown, City of / Reclamation of Brewery Flats on Big Spring Creek**

This project has been successfully completed. Metal-contaminated soils have been removed and the area restored. The site, now a suburban park adjacent to Big Spring Creek, is widely used by local residents.

**7. Montana Department of Natural Resources and Conservation / St. Mary Studies and Design**

The purpose of this project is to provide the necessary administrative, technical, and funding support to help "jump-start" the process of rehabilitating the St. Mary Diversion Facilities by securing completion of the studies and preliminary designs necessary to obtain congressional authorization and appropriation of construction funds. The engineering contract has been awarded. Phase 1 Engineering (data review, preliminary cost estimates, and proposed rehabilitation plan) and Phase 2 Engineering (preliminary engineering, hydrologic and hydraulic analysis, and preliminary economic analysis) have been completed. Geotechnical investigations at the site of two major siphon crossings and location of a new bridge have been initiated. A detailed topographic survey of the proposed canal route has also been initiated. Federal funds totaling $8.5 million have been appropriated to move the project forward. Federal legislation has been introduced in Congress authorizing the Department of the Interior, through the U.S. Bureau of Reclamation (USBR), to conduct studies required under the National Environmental Policy Act, and to begin rehabilitation of the St. Mary Diversion Facilities. The St. Mary Rehabilitation Working Group meets monthly to advise the state on appropriate strategy and to monitor progress.

**8. Butte-Silver Bow Local Government / Belmont Shaft Failure and Subsidence Mitigation**

This project is designed to mitigate the imminent public safety hazards associated with five identified major mine shaft failures in Butte. A secondary goal is to promote redevelopment of those properties encumbered by these failing shafts. The project sponsor prepared engineering design and bid specifications to address the shafts, selected a general contractor to perform construction work, and also monitored the condition of other failed shaft closures in the Butte area. Mitigation work on the first of five failed shafts – the Belmont – was completed successfully in January 2006. Over the next 18 months, Butte-Silver Bow will work on the other four major shafts: the Buffalo, Parrott, Orphan Boy, and Otisco. In addition, Butte-Silver Bow continues to monitor other subsidence problems in Butte and take mitigation measures as necessary.

**9. Pondera County / Oil and Gas Well Plug and Abandonment Project**

This project cost-shares the plugging of abandoned oil and gas wells with small operators. The project has been contracted, and efforts to prioritize sites are under way.

**10. Custer County Conservation District / Yellowstone River Resource Conservation Project**

The contract for the grant agreement on this project, as authorized by the 59th Montana Legislature, was signed in May 2006. Application materials included project history and work completed under the previous grant agreement. The Yellowstone River Conservation District Council (YRCDC) intends to use these grant funds to: conduct further studies into river channel stability, sedimentation, and erosion, and compare these channel processes for select reaches of the river; assemble and process historic aerial photography in(to) a consistent system (GIS) for use in further geomorphic study and analysis; and conduct a cumulative effects assessment. The grant agreement states that the project sponsor will have until January 1, 2009, to complete the detailed work.

**11. Teton County/Oil and Gas Well Plug and Abandonment**

This project cost-shares the plugging of abandoned oil and gas wells with small operators. The project has been contracted, and efforts to prioritize sites are under way.

**12. Toole County/Plugging and Abandonment Aid to Small Oil and Gas Operators**

Much like the Pondera and Teton county grants above, this project shares the cost of plugging and abandoning oil and gas wells with small operators. Participation was slow to start, but has recently gained momentum. The project should be completed in early 2007.

**13. Montana Department of Environmental Quality/Zortman Mine Reclamation – Completion of Preferred Alternative Z-6**

The contract for this project was recently signed and work will be completed during the 2007 construction season. A revised reclamation plan calls for re-direction of storm water from the Alder Gulch waste dump, lining the dump, and topsoiling. No waste rock will be removed and no material from the Alder Gulch site will be placed in the North Alabama pit. The DEQ and Fort Belknap Tribe agreed to this revision in August 2006.

**14. Butte-Silver Bow Local Government / Excelsior Reclamation**

This project will reclaim approximately four acres of land impacted by mineral development in the urban corridor of Butte. The goals are: (1) to mitigate adverse environmental impacts present at the site, (2) to help prevent pollution from storm water runoff by reducing erosion, particularly during storm events, and (3) to improve the visual appearance of the landscape. Construction includes re-contouring steep slopes that characterize major portions of the site, importing clean fill materials, and adding compost to existing soils to enhance plant growth. Also included are planting trees and new vegetation in barren areas and installing storm water control structures, as necessary. After completing field analysis and preparing work specifications, the project will be bid and constructed in spring 2007, in time for spring plantings.

**15. Powell County / Garrison Wetland Reclamation and Redevelopment**

The county recently issued an RFP and selected a consultant to assist in developing a No Action Voluntary Cleanup Plan for DEQ approval. The county has completed a cadastral survey of the site and design work is under way. An adjacent landowner has contacted the county about additional recreation trails on 100 acres of land he has acquired. This other site contains significant wetlands. The county may use the cleaned-up Garrison site as a base area and apply for Natural Resource Damage Program funds to cover trails and other facilities on the adjacent land. After a slow start, the project is progressing rapidly.

**16. Montana Department of Environmental Quality / MTS Tire Recyclers Cleanup**

This project removed/disposed of approximately 300,000 waste tires at a site near Columbus. A fire that started before the project began increased the cost of cleanup considerably. DEQ was able to secure an additional $466,000 from non-RDGP sources. The project was successfully completed, and final DEQ approval of cleanup occurred in June 2006.

**17. Montana Department of Environmental Quality / Former Harlem Equity Co-Op Bulk Plant Cleanup**

This project has two objectives: (1) removal of petroleum-contaminated soil to reduce the mass of petroleum contamination on-site, and (2) continued groundwater monitoring for up to three years. The first goal has been achieved and groundwater monitoring is ongoing as proposed.

Soil removal activities were completed in October and November 2005. A total of 7,965 bank (in-place) cubic yards of petroleum-contaminated soil was removed from the site and hauled to a disposal facility in Blaine County. The estimated volume of petroleum-contaminated soil originally targeted for removal was 12,000 bank cubic yards; however, that total included the removal of contaminated soil located beneath the main irrigation ditch that crosses the site. A decision was made to leave the irrigation ditch in place due to the high cost of replacing it. Unanticipated high diesel fuel costs, partially due to Hurricanes Katrina and Rita, constrained the budget and limited ability to remove any additional petroleum-contaminated soil. In April 2006, 11 groundwater monitoring wells were installed. The first groundwater-monitoring event was completed in July 2006. The next groundwater-monitoring event is tentatively scheduled for December 2006. Approximately 80 percent of proposed site activities have been completed, all within budget.

**Projects Approved by the 2003 Legislature**

**1. Big Horn Conservation District/State Line Groundwater Monitoring Network for Tongue and Powder River Watersheds**

The purpose of this project was to complete installation of a groundwater-monitoring network for long-term assessment of coalbed methane impacts to (and recovery of) Montana aquifers. Drilling locations were determined and a detailed lithologic and well completion prospectus has been prepared for each site. The drilling contract was awarded and drilling began in mid-October 2004. This project is now complete. Groundwater monitoring at existing wells in the project area has been under way since the beginning of the project. Monitoring data are being updated as collected. The data are available online (http://mbmggwic.mtech.edu/) and automatic hydrographs and maps can be generated at this website.

**2. Sunburst, Town of/Sunburst Water Supply Renovation**

A contract for this project was signed in July 2003 for $185,249. The project is now complete. The scope of work included a well inventory, hydrological assessment, unused pump removal, sampling and inspection of existing water wells, plugging unused wells, and well renovation, all with the objective of providing a reliable town water supply. The town has applied for a 2006 RRGL grant to develop additional back-up water wells.

**3. Governor's Office of Economic Opportunity/Growing Carbon: "Applying – Market Based Conservation through Carbon Sequestration"**

The purpose of this project was to establish a process to market carbon credit trades nationally through the National Carbon Offset Coalition (NCOC). The NCOC program is designed to assist landowners in planning carbon sequestration units (CSUs) in a manner that adheres to national standards and protocols and meets the needs of potential buyers. (The term "carbon sequestration unit" represents an amount of organic carbon sequestered in wood or soil equivalent to removal of one metric ton of carbon dioxide [CO2] from the atmosphere.)

The NCOC cooperates with numerous private and nonprofit corporations, state agencies, and universities to package the CSUs into portfolio units and offer them for sale on emerging private markets.

In the future, NCOC expects that a federally based voluntary or regulatory market will exist. Carbon credit trades will then be conducted similar to commodity trades. Since 1997 the forerunners to NCOC and the present NCOC have worked to develop an entity with the ability to participate in such markets.

The RDGP grant combined with the Phase 1 DOE and Phase 2 DOE grants has placed the NCOC in a leadership position nationally in the initiative to design and implement a national carbon credit trading program for forests and agricultural/soils.

**4. Montana Board of Oil and Gas Conservation / 2003 Orphaned Well Plug and Abandonment, and Site Restoration**

The purpose of this project is to perform well plugging and site restoration at well sites in Teton, Pondera, Toole, Liberty, Blaine, Hill, and Glacier counties. Fourteen wells have been plugged. The project will be completed in January 2007.

**5. Toole County / 2003 Plugging and Abandonment Aid to Small, Independent Oil Operators**

The purpose of this project is to cost-share the cost of plugging shut-in wells with small oil and gas operators. Approximately 120 operators have pledged to participate. Implementation has been slower than expected due to the high price of oil. The project is now on track and expected to be complete by spring 2007. In order to spend all of the $240,000 appropriation, small operators must accelerate plugging efforts.

**6. Montana Board of Oil and Gas Conservation / 2003 Northern District Orphaned Well Plug and Abandonment, and Site Restoration**

The purpose of this project is to perform well plugging and site restoration at well sites in Toole, Glacier, Chouteau, Teton, and Liberty counties. A total of 49 wells were plugged, and the project has been completed.

**7. Montana Board of Oil and Gas Conservation / 2003 Southern District Orphaned Well Plug and Abandonment, and Site Restoration**

Eleven wells were plugged and abandoned and the surface restored in Yellowstone, Musselshell, Stillwater, Sweet Grass, Wheatland, and Big Horn counties. The project has been completed.

**8. Montana Department of Environmental Quality / Washington Mine and Mill Reclamation**

The Washington Mine Reclamation Project is part of a larger project that also involves reclamation work at the Belle Lodge and Big Chief mines, all in Jefferson County. Work on the Washington Mine Reclamation Project was awarded in September 2005 for a two-year project. The 2005 work consisted of site preparation, including excavation and construction of the mine waste repository. The contractor was issued a notice to proceed for the 2006 construction season and work resumed on the project in June 2006. Mine waste was hauled from the Belle Lodge and Washington mines and placed in the repository. Work will be completed on the Washington project in November 2006.

**9. Powell County / CMC Roundhouse Site Cleanup**

The county has acquired title to the property. RDGP funds have been used to prepare a Voluntary Cleanup Action Plan for the site. That plan has been reviewed by DEQ and the county is responding to its comments. The county received an additional $200,000 grant from EPA and has applied for $285,380 from RDGP. This follow-up RDGP grant is critical to finishing site cleanup. Once the Voluntary Cleanup Action Plan is approved by DEQ, the county will issue an RFP for the actual cleanup.

**10. Montana Department of Environmental Quality / Drumlummon Tailings and Goldsil / Argo Millsite and Mine Waste Reclamation**

The Drumlummon Mine Reclamation project along Silver Creek in Lewis and Clark County has been put on hold while the owner determines if he has a buyer who will either re-mine or subdivide the property for home sites. The property owner has discussed with DEQ the possibility of mining through the property with a Small Miners Exclusion. Several individuals who are either in the process of, or are investigating, purchasing the property for development have also contacted DEQ Abandoned Mines Section. Until clarification of the landowner's position toward subdivision or re-mining, the DEQ Abandoned Mines Section has put the project on hold.

**11. Sheridan County Conservation District / Protecting Natural Resources by Reclaiming Oil-Field Brine-Contaminated Soils**

As of October 2006, this project has provided for investigation of 14 abandoned oil drilling sites and complete reclamation of one abandoned site in Sheridan County. Electromagnetic conductivity surveys were completed on nine of the sites, and underground salt brine plumes expanding from mud pits have been mapped. Groundwater-monitoring wells have been installed at five of the sites. Water samples were collected and tested at the MBMG lab in Butte. Field tests on water samples were also conducted. Soil samples were collected and examined on 11 of the sites. The 14 sites were treated with an experimental soil additive, a carbon-based compound designed to remove salt from the soil and groundwater via microbial activity. On the completely reclaimed site, 355 tons of contaminated material was removed and disposed of. The pit was filled and leveled and the landowner seeded durum. A technical advisory committee is selecting another small site to reclaim with the small amount of remaining funds. Maps of the sites and the brine plumes have been created, and an extensive photographic record of the project has been kept. Data collected during this project is available on the MBMG GWIC website. This project will expire at the end of October 2006; an extension may be required to finish the work.

**Projects Approved by the 2001 Legislature**

**1. Lewistown, City of / Reclamation of Brewery Flats on Big Spring Creek**

The contract for this project was signed in May 2002 ($292,740). A request for an extension was granted, extending the expiration date to May 2005. The city developed a revised cleanup plan in conjunction with DEQ that required removal of additional contaminated soils from the site. Additional RDGP and EPA funding was received in 2005. The project was successfully completed in summer 2006.

**2. Broadwater Conservation District / Big Belt Mine Reclamation Project**

Construction work has been completed. Currently, the grantee and the USFS are controlling weeds on reclaimed areas in Avalanche, Confederate, and Magpie gulches, just east of Canyon Ferry Lake. Work is expected to be completed at the end of 2006.

**3. Butte-Silver Bow County / Upper Clark Fork Basin; Superfund Technical Assistance**

The project was designed to provide technical guidance and expertise on various superfund projects to the local governments of Butte-Silver Bow, Anaconda-Deer Lodge, and Powell and Granite counties. In the period ending June 2006, the assistance was significant on several key projects, including the remediation work ongoing on the Silver Bow Creek and Berkeley Pit cleanups, and the clean-up decision process for the Clark Fork River and Butte Priority Soils Operable Units. Also, the project sponsor provided input on county projects proposed under the Natural Resource Damage Program. The expertise and assistance to the local governments on these technical issues has proven to be very beneficial, as the region's final superfund decisions have been made. The project was completed and closed out in 2006.

**4. Custer County Conservation District / Yellowstone River Resource Conservation Project**

The contract for the grant agreement on this project, as authorized by the 57th Montana Legislature, was signed in September 2001. Originally the scope included collection of information on the geomorphic and physical features of the Yellowstone River and development of means for public access to that information. Cooperation with the YRCDC and the ACOE was crucial to completion of those phases of the project. Existing data were reviewed and compiled, and new studies within the Yellowstone corridor from Sweet Grass County to the Montana-North Dakota border were conducted as part of ongoing efforts toward achieving more effective management of the resource. Work on this grant was completed in early July 2006, with all funds expended. Termination of the grant agreement was effective 7/15/06, and the grant was formally completed on 8/11/06.

**Projects Approved by the 1999 Legislature**

**1. Fergus County Conservation District / Central Montana Artesian Basin Groundwater Project**

The artesian well plugging and repair work was completed in April 2006. The MBMG has not submitted a final bill to the district. MBMG is reviewing a draft final report summarizing project results and recommendations. A contract balance of $50,054 remains.

**2. Butte-Silver Bow Local Government / Mining City Mineyard Preservation and Enhancement**

Butte-Silver Bow completed preservation, restoration, and/or stabilization on all 10 publicly owned headframes and mine yards in Butte, with major restoration completed on six – Anselmo, Steward, Original, Mountain Con, Travona, and Orphan Girl. In addition, problems with partial functionality of a steam hoist and underground access at the Steward were addressed under the project. After each headframe was restored, the community implemented a lighting project, using donations and private sponsors. The project was a great success; grant work was completed in November 2005.

2007

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